An Explanatory Mixed-Methods Study of How Classroom Teachers Perceive Instructional Coaching at an Urban High School in Pennsylvania

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Dedications

This dissertation is dedicated to my wife and children, mother and father, and oldest brother.

To my wife, Christina, my son Gavin, and my daughter Calissa: Without your guidance, selfless sacrifices, and continual supports, the doctoral journey would not have been possible. Thank you for always reminding me what is most important in life.

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Abstract

An Explanatory Mixed-Methods Study of How Classroom Teachers Perceive Instructional Coaching at an Urban High School In Pennsylvania

Michael John Reed

Instructional coaching has been recognized as a research-based professional development model that improves teacher practice and increases student achievement. The problem is that most secondary schools attempting to implement instructional coaching fail to have instructional coaches work directly with teachers for an adequate amount of time, which minimizes the effect of the coaching process. The purpose of this explanatory mixed-methods study was to examine how classroom teachers perceived instructional coaching at an urban high school in Pennsylvania and to measure the relationship of teachers' experience and content assignment to their receptivity to coaching. Three classroom teachers were interviewed several times using a phenomenological approach to explore how classroom teachers perceived and experienced instructional coaching. The classroom teachers credited instructional coaching with improving how they taught and planned, increasing active engagement throughout the school, decreasing behavioral infractions from students, increasing student achievement results, and creating a school-wide collaborative environment. Through the interview process, common themes emerged regarding the desired skill sets of an instructional coach, the challenges with implementing instructional coaching at the high school level, and the coaching approaches that had the greatest effect on changing instructional practice. Teachers reported that the interpersonal skills and instructional expertise of the coaches and a

positive work environment established by the administration were essential for instructional coaching to affect teacher practice within a high school setting. Prior to the qualitative interviews, 77 classroom teachers completed an adapted version of the Teacher Reflection and Impact Survey to investigate the relationships, characteristics, and impact of the instructional coaching model being implemented at the research site. The study found statistically significant differences when comparing how content area affects receptivity to instructional coaching. Although all content area scores were considered high, the results indicated that mathematics, science, and elective teachers had significantly higher receptivity scores than the English and social studies teachers. Differences were also found when comparing how teacher experience affected receptivity to coaching; however these differences were not statistically significant.

Keywords: Instructional coaching, professional development, teacher effectiveness, receptivity, implementation, high school

Chapter 1: Introduction to the Research

Introduction to the Problem

The quality of a classroom teacher has a direct influence on student achievement. This relationship explains why teacher effectiveness has rapidly risen to the top of the education policy agenda. A highly effective teacher is defined as an educator who demonstrates high expectations for all students, modifies instruction based on individual learners' needs to meet academic outcomes, uses instructional best practices, and routinely collaborates with other educational stakeholders to ensure student success (Goe, Bell, & Litle, 2008). Studies have shown approximately a 50-percentile achievement point difference between students who have had 3 years of effective teaching versus 3 years of ineffective teaching (Sanders & Rivers, 1996). Miller (2003) reported that teacher effectiveness accounts for approximately 20% of the variance in student achievement. Although achievement predictors such as the economic status of students and the educational level of parents are outside of the school's influence, the quality of each individual teacher remains a significant variable that impacts student learning (Isaacs & Magnuson, 2011). Schools are responsible for maximizing student learning and are held accountable for student achievement.

According to Darling-Hammond and Rothman (2011), the U.S. Department of Education identified teacher effectiveness as a necessary component for school improvement. It now requires states to enact explicit accountability models to measure teacher effectiveness in order to be eligible for competitive federal funding. Improving teacher effectiveness can raise overall student achievement levels. Ensuring teachers are

capable of improving student learning is perhaps the most significant step a district can take to increase achievement of all learners (Darling-Hammond & Rothman, 2011).

In response to the national attention on teacher effectiveness and school reform, the Pennsylvania Department of Education (PDE; 2011) transformed how teachers and principals are evaluated. In 2013, PDE began implementing Charlotte Danielson's framework for teaching as an evaluation tool in an attempt to measure teacher effectiveness and to assist teachers and principals in identifying areas of needed professional growth.

Danielson's framework is a set of research-based instructional components that are aligned to the Interstate New Teacher Assessment and Support Consortium (INTASC; Danielson, 2013). The teaching framework is divided into 22 components and 76 subcomponents clustered into the four domains of planning and preparation, classroom environment, instruction, and professional responsibilities. Although the Danielson framework is intended to help individuals pinpoint areas of needed growth (Danielson, 2006), there is no apparent formula or system in place to address the professional development needs of teachers as they emerge. With teacher quality accounting for approximately 20% of the variance in student achievement and PDE's new teacher effectiveness model, how will districts meet teacher development demands?

Teacher quality affects student learning; therefore school leaders are responsible for implementing effective systems to build teachers' skill level. Issacs and Magnuson (2011), Marzano (2003), and Miller (2003) indicated that teacher quality is the most important variable within a school system's influence that impacts student learning. In order to positively influence teachers' effectiveness in the classroom, schools must

implement meaningful professional development programs that ensure teachers are given adequate time and support to put what they are learning into practice (Miller, 2003).

Instructional coaching has been proven to be significantly more effective in building teachers' skill level than traditional forms of professional development. According to Denton and Hasbrouck (2009), instructional coaching is defined as a job-embedded approach to supporting teachers' learning. J. Knight (2007) defined a coach as an onsite professional developer who helps teachers implement instructional best practices across all content areas. Bean and Swan Dagen (2012) reported that the primary role of an instructional coach is to work directly with classroom teachers to improve pedagogy.

According to Cassidy, Garrett, Maxfield, and Patchett (2009), traditional models of teacher professional development are ineffective. Carlisle and Berebitsky (2011) defined the traditional model of professional development as the process whereby people get together in the same room with a presenter and learn about a topic that is likely linked to the priorities of a school district. It is the most common form of professional development offered in public schools. In this model, the topic is chosen most often by one person based on either a perceived need or on feedback from the intended audience. Cassidy et al. (2009) reported that teachers only implemented approximately 10% of skills and strategies learned in traditional professional development.

Instructional coaching, when implemented appropriately, has been shown to improve teacher practice (Borman & Feger, 2006; Joyce & Showers, 1980; J. Knight, 2007; McCombs & Marsh, 2009; Vanderburg & Stephens, 2010; Walpole, McKenna, Uribe-Zarain, & Lamitina, 2010). Neufeld and Roper (2003) found that teachers were

more likely to try out new ideas when their professional development included instructional coaching support. The University of Kansas Center for Research and Learning reported that although traditional models of professional development had a 10% implementation rate, effective instructional coaching had an 85%–90% implementation rate (Devino & Fitzsimons, 2008).

Improving teacher skill level is essential. Instructional coaching has been shown to improve teacher development. However, research suggests that most schools that attempt to use instructional coaching to improve teacher practice do not implement instructional coaching effectively. Atteberry and Bryk (2011), in a 4-year longitudinal study across eight states, revealed that on average instructional coaches only completed 39% of their prescribed teacher collaboration sessions. In Bean and Swan Dagen's (2012) meta-analysis of coaching research, they reported that 70% of middle and high school instructional coaches were spending less than 30% of their time working directly with classroom teachers.

Statement of the Problem to Be Researched

The problem in this study was that although instructional coaching can improve teacher practice, little is known about how high school classroom teachers perceive coaching. Instructional coaches must work directly with classroom teachers to change practice. However, according to J. Knight (2011), the most pervasive problem with instructional coaching at the high school level is that coaches are not working directly with classroom teachers for an adequate amount of time.

McCombs and Marsh's (2009) research supported the findings of Atteberry and Bryk (2011), Bean and Swan Dagen (2012), J. Knight (2011), and Ippolito (2009),

indicating that the majority of schools that have invested financial resources into instructional coaching have not implemented an instructional coaching process effectively. McKenna and Walpole (2010) shared some insight into the complexity of implementation, reporting that high school instructional coaches typically had large caseloads of teachers and faced departmentalization intricacies that led to teachers resisting the instructional coaching process. Although the instructional coaching research identifies a problem with implementation with links to departmental complexities, the field appears to lack sufficient studies focused specifically on how classroom teachers perceive instructional coaching and how years of experience and content assignment affect receptivity to the coaching process.

Purpose and Significance of the Problem

The purpose of this explanatory mixed-methods study was to explore how classroom teachers perceived instructional coaching at a Pennsylvania urban high school. The study also measured the relationship of teachers' experience and content assignment to their receptivity to the instructional coaching process. Understanding teachers' perceptions and the relationships that affect receptivity to instructional coaching is significant because it may help school districts increase the amount of time that coaches work directly with teachers. Increasing the amount of time instructional coaches work directly with teachers is important for two reasons. First, correlations have been found between the amount of time an instructional coach and teacher collaborate and long-term changes in teachers' instructional practice. Second, studies report a positive correlation between student achievement and the amount of time an instructional coach collaborates with a teacher (L'Allier, Elish-Piper, & Bean, 2010).

The research of Marsh, McCombs, Lockwood, Martorell, Gershwin, and Naftel (2008) analyzed what instructional coaches do when not working with classroom teachers (e.g., non-instructional duties, managing resources, testing, etc.). However, the field of instructional coaching research has focused minimal attention on exploring the implementation problem through the experiences of classroom teachers. J. Knight (2007) contended that in order for instructional coaching to be effective, coaching must be done *with* teachers and not *to* teachers. His focus on the process affirmed the need to gain a deeper understanding of how teachers' professional experiences and perceptions of instructional coaching affects receptivity and the overall implementation of coaching at the high school level.

Research Questions

The central research question of this explanatory mixed-methods study was, How do classroom teachers perceive instructional coaching at an urban high school in Pennsylvania? To answer this central research question, the following subquestions were explored:

1. What is the relationship between a classroom teacher's content area assignment and receptivity to instructional coaching?
2. What is the relationship between a classroom teacher's years of experience and receptivity to instructional coaching?

Conceptual Framework

Researcher Stances and Experiential Base

The researcher was a principal of a large urban high school in Pennsylvania that utilized a transformation leadership model that included instructional coaching to

increase the likelihood of sustainability and long-term success. The researcher has strong constructivist beliefs, and instructional coaching was chosen to help increase authentic collaboration and to build teachers' pedagogical skill level. At this high school, teachers had the option of working with instructional coaches, but it was not a mandated requirement. Teachers could choose to collaborate with coaches individually or in small groups throughout the entire school year. Through data analysis, collaborative planning, and modeling lessons with students, the instructional coaches focused on teaching teachers how to use research-based best practices to maximize student learning while increasing relevance through lesson design.

The researcher had 11 years of experience working with instructional coaching at the secondary level at three separate high schools. Although the students, teachers, and community differed at each location, all three of the high schools demonstrated double-digit academic reading and mathematics growth as measured by PDE following the implementation of instructional coaching. The researcher has been actively involved with the Pennsylvania Institute of Instructional Coaching (PIIC) for the past decade, participating in professional development while also serving as a voluntary panelist and professional developer for the organization. PIIC is a professional network, funded by the Annenberg Foundation and PDE. PIIC provides professional development and collaboration forums for instructional coaches and principals across the state of Pennsylvania. The researcher has also been actively involved with the University of Pennsylvania's Penn Literacy Network (PLN), coordinating coursework and professional learning sessions to help build the capacity of high school instructional coaches, teachers, and school administrators.

The researcher was a social studies teacher and school counselor prior to his high school leadership experiences. While in teaching and counseling roles, he routinely observed how adolescents construct differentiated meaning of events based on their personal experiences and social interactions. It was while the researcher was in these roles that he discovered that he learned best through continual social interactions and collaborative planning with colleagues. According to the researcher, these experiences shaped his constructivist beliefs as he observed and experienced relevant, higher-level learning through purposeful social experiences.

Theoretical Framework

Three primary learning theories have shaped the researcher's constructivist mental model and assumptions about instructional coaching. The three theories are andragogy, transformative learning, and social development. Andragogy is a theory describing how adults learn and is used extensively in adult training programs. Zmeyov (1998) reported that andragogy is designed around six key principles. The six key principles are as follows:

1. Adult learners are internally motivated and self-directed.
2. Adults bring life experiences and knowledge to learning experiences.
3. Adults are goal oriented.
4. Adults are relevancy oriented.
5. Adults are practical.
6. Adult learners must be respected.

The principles of andragogy are relevant for effective implementation of instructional coaching because they place extensive focus on process and what participants require in

order to maximize the learning experience. Andragogy provides a framework for how to increase adult learning.

E. Taylor (2007) described transformative theory as being constructivist. He asserted that personal experiences and beliefs create personalized meaning from the learning experience. The principles of transformative theory indicate that learning involves change to meaning structures and that change occurs through a reflective process. The researcher's personal observations suggest that transformative theory is evidenced in instructional coaching through the continual reflective process that occurs between the instructional coach and teacher, focused on pedagogical best practice.

Social development theory, created by Lev Vygotsky, suggests that full cognitive development requires social interaction (Wertsch, 1985). The major theme of Vygotsky's framework is that social interaction plays a fundamental role in the development of cognition. The theory suggests that the potential for learning and development depends upon the learner's zone of proximal development and that full development may only be reached through social interaction. Wertsch (1985) suggested that the range of skill that can be developed through peer collaboration far exceeds what an individual learner can attain. Social development theory connects to Leana's (2011) research, indicating that teachers who collaborated with one another and developed social capital significantly outperformed teachers who had worked in isolation. The researcher believes that instructional coaching is most effective when the coach uses social interactions to create safe and reflective conditions, as described by Vygotsky. When an instructional coach creates a nurturing, collaborative environment that helps a teacher focus on the reflective

practice, it increases the likelihood that the teacher will identify areas of needed growth and that personal learning will increase.

The researcher's mental model has been created through teaching, counseling, and collaborative leadership experiences, including involvement with PIIC and PLN, coupled with doctoral coursework and professional readings. These experiences have established positive assumptions regarding the power of collaboration, instructional coaching, design thinking, and a constructivist approach. The researcher's stance for this explanatory mixed-methods study could best be defined as interpretive. Interpretive was the most appropriate stance because the author anticipated that there would be multiple perceptions about instructional coaching that were context bound and because the purpose of the study was to explore teacher perceptions and receptivity to the instructional coaching process.

Conceptual Framework

This explanatory mixed-methods study examined how classroom teachers perceived instructional coaching at a large urban high school in Pennsylvania. The study measured the relationship of teachers' experience and content assignment to their receptiveness to the instructional coaching process. Although coaching is an effective process for transforming teacher practice, the majority of secondary schools that attempt to implement a coaching model fail to have instructional coaches work with teachers for an adequate amount of time (Bean & Swan Dagen, 2012). The research field identifies coaching standards, necessary skill sets for instructional coaches, frameworks for how teachers and coaches should collaborate, and what instructional coaches do when not working with teachers, but there appears to be limited research on how classroom

teachers' perceptions, experience, and content area assignment may positively or negatively affect implementation of an instructional coaching process.

The researcher investigated three streams of scholarly literature to build deeper background knowledge and surface implementation challenges in order to explore how teachers perceive instructional coaching. The first stream focused on defining and providing essential characteristics of effective instructional coaching. The primary works of Knight, Bean, Strahan, Gallucci, Blamey, Walpole, and Casey were examined to analyze essential characteristics. The second stream investigated the theoretical underpinnings of instructional coaching and organizational learning. The research of Brown, Stroh, Fouts, Baker, Lieb, Senge, Fullan, Pinks, Scharmer, and Zmeyov was explored to gather insight on andragogy, motivation, system thinking, and the theoretical underpinnings of instructional coaching. The third stream reviewed the different models and approaches of instructional coaching and the research of Ippolito, Costa, Atteburry, Burk, Dozier, and Duncan were assessed.

These three streams served as a foundation to gain a deeper understanding of the instructional coaching process and the complexities affecting implementation of coaching at the high school level. The review also identified gaps in the research. Figure 1.1 illustrates a conceptual model that includes the characteristics of the researcher's mental model, the three streams of research, and a visual representation of the instructional coaching process.

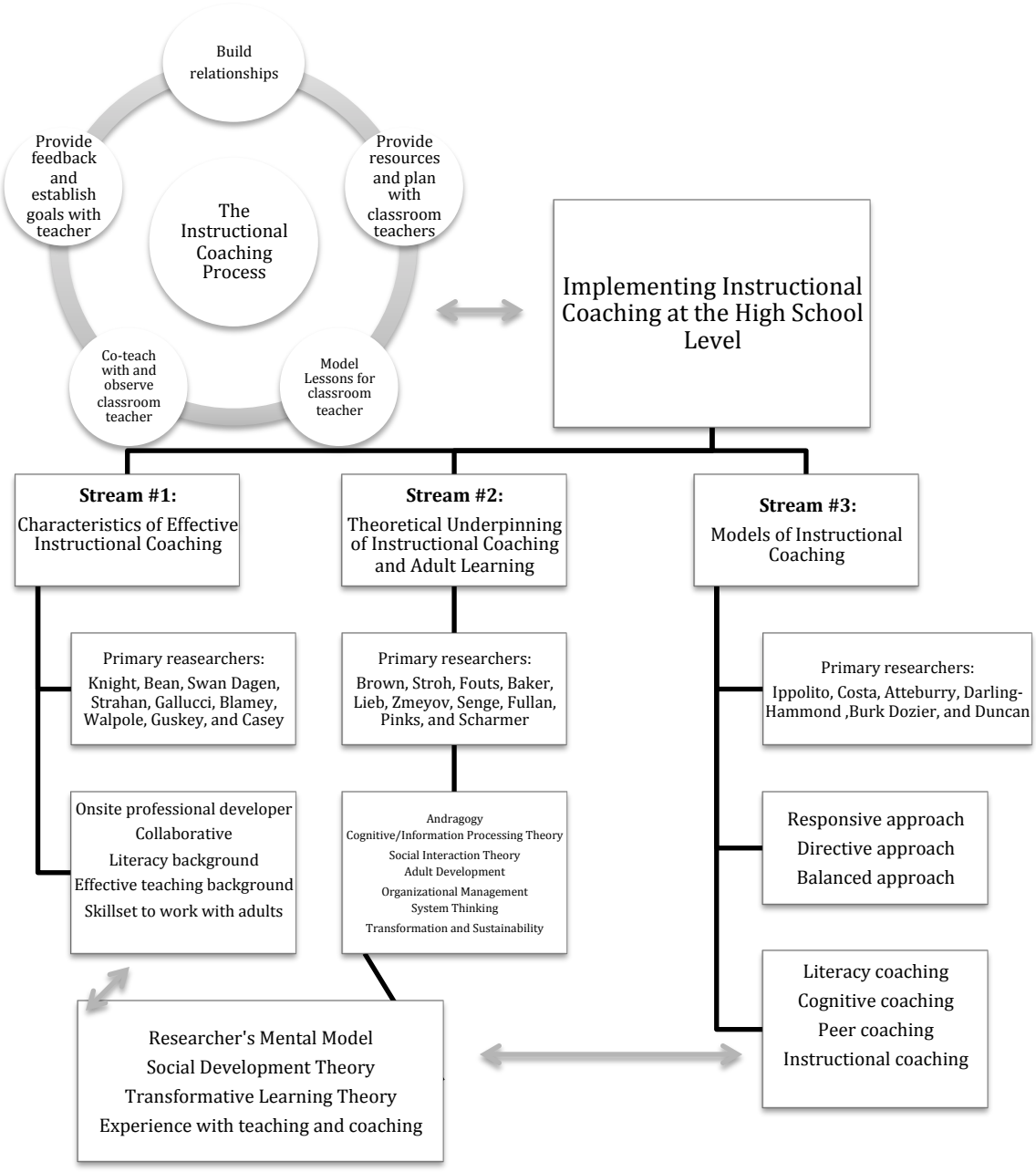

Figure 1.1. Conceptual framework.

Definition of Terms

Andragogy: A theory that holds a set of assumptions about how an adult learns (Lieb, 1991; Zmeyov, 1998).

Capacity building: A systemic plan offi collaboration to build skills of each individual and the organization as a whole (Fullan, 2010).

Instructional coach: A master teacher who helps colleagues to recognize what they know and can do, assists teachers as they strengthen their ability to make more effective use of what they know and do and supports teachers as they learn more and do more (Strahan, Geitner, & Lodico, 2010).

Instructional coaching: A job-embedded approach to supporting teachers' learning (Denton & Hasbrouck, 2009).

Job-embedded professional development: a learn-try-evaluate cycle that repeats over time. It requires active teacher involvement and continual implementation (Dozier, 2006).

Presencing: An active listening process where a person suspends judgment, fear, and cynicism, thus connecting to a deeper source from which the future begins to arise (Scharmer, 2009).

Professional development: activities that develop an individual's skills, knowledge, expertise, and other characteristics as a teacher (Lemke, 2010).

Social capital: What educators produce through collaboration (Leana, 2011). Leana reported that social capital is the missing link in school reform.

Assumptions and Limitations

Assumptions

The underlying assumption of this study was that examining how classroom teachers perceive instructional coaching and measuring the relationship of teachers' experience and content assignment to their receptivity to coaching may help instructional coaches and administrators increase implementation. Exploring the instructional coaching implementation problem through the lens of the classroom teacher was intended to help instructional coaches and leadership teams identify teachers who are more likely to be receptive to the coaching process. Most high school instructional coaches demonstrate a tendency to avoid high-impact collaborative coaching strategies after they encounter levels of resistance. Therefore, if levels of resistance can be avoided or minimized, then it is assumed that instructional coaches may sustain an appropriate focus on implementing high-impact collaborative coaching strategies that will improve teacher practice.

This assumption emerged while studying creative leadership. It is essential for change agents to suspend judgment, to be empathetic, and to understand customers for innovation and sustainable change to occur (T. Brown & Kātz, 2009; Kelley & Littman, 2005; Scharmer, 2009; Senge, 2008). A synthesis of their combined research suggests that through presencing and experiencing events through the lens of the consumer, strategies for continual improvement will emerge.

Limitations

There were five possible limitations that could have affected the exploration of how teachers perceived instructional coaching at an urban school in Pennsylvania. The first limitation was whether or not enough teachers would participate in the research

study. The researcher recently left the school where the research was conducted, and several of the teachers were allegedly disappointed that the researcher left the school. Access for the study was approved by district administration; however participation had to remain voluntary to meet ethical standards. Concerns emerged regarding whether or

Table 1.1

Researcher's Chart of Assumptions

Researcher's experience, values, and beliefs	Assumptions
Former middle and high school teacher and school counselor with a background in meeting needs of higher-risk learners. Worked extensively with PIIC and University of Pennsylvania's Penn Literacy Network. Recently served as the head principal of a large, urban, comprehensive high school utilizing coaching in its transformation model. Currently serves as an assistant dean of a college with primary responsibilities of professor evaluation and professional development.	Effective instructional coaching and social capital building of teachers are the missing links in high school transformation. A successful coaching model will help create a collaborative environment that will maximize the capacity of all team members.
The researcher believes that when high school teachers break the traditional practice of working in isolation and they collaborate with one another about instructional best practices and student learning, they improve instructional practice.	When teachers plan and review data together and work collaboratively with an instructional coach, they begin to feel a level of accountability to help one another and thus provide a better level of instruction to students.
The researcher values the importance of developing a high level of empathy for teachers and students and believes a collaborative process is necessary to maximize the capacity of an organization.	This assumption emerged through professional observation, and while studying how having empathy and thoroughly understanding customers are essential for maximizing impact through a design thinking and collaborative process (T. Brown & Kātz, 2009; Kelley & Littman, 2005).
The researcher believes that a mixed-methods research approach is the most	Using an ANOVA to measure how years of experience and departmental

appropriate for this study. The collection and measurement of quantitative and qualitative data from classroom teachers may help identify patterns of receptivity to enhance the implementation of instructional coaching.	assignment affect receptivity to instructional coaching will help identify areas of openness and resistance within the faculty. Coding qualitative information from teacher interviews will help identify what differences exist between receptive and nonreceptive teachers, along with what classroom teachers desire through the instructional coaching process.

not teachers were empathetic to why the researcher changed employment and if teachers would be willing to complete the necessary surveys and interviews for the study.

The second limitation was that the author supervised and trained many of the teachers who received instructional coaching. Although the surveys were anonymous, this previous supervisor-to-teacher relationship may have led participants to be more reserved in sharing their honest perceptions about instructional coaching. The third possible limitation was whether or not there were significant differences in skill level between the instructional coaches who were delivering support throughout the school. The skill levels of the coaches may have affected teachers' overall perceptions of the instructional coaching process more than the independent variables being measured.

The fourth limitation was the relatively small size of the study. Seventy-seven classroom teachers completed surveys and 3 teachers were interviewed from the research site. In order to create a large-enough sample size to compare teacher groupings, departmental assignments had to be combined into three categories: humanities, math and science, and elective. The final limitation was the author's mental model and personal beliefs about instructional coaching.

Delimitations

The delimitations of this study focused specifically on how teachers perceived instructional coaching. The study measured the relationship of teachers' experience and content assignment to their receptivity to the instructional coaching process. This study did not focus on the perceptions of students, instructional coaches, administration, or other school specialists.

This narrow focus of exploring instructional coaching through teachers' perceptions was intended to gain understanding of the relational patterns affecting the implementation of instructional coaching. This information may add to the research attempting to assess why the majority of high schools struggle to effectively implement instructional coaching and may assist instructional coaches and administrators in increasing their implementation efforts. The author had a strong interest in exploring the correlations between instructional coaching and student achievement. However, due to the timelines within this study, student achievement correlations were not explored.

Summary

Issacs and Magnuson (2011), Marzano (2003), Sanders and Rivers (1996), and Miller (2003) reported that teacher quality is the most important variable within a school system's influence that affects student learning, and legislative mandates are forcing districts to explicitly measure teacher effectiveness. Instructional coaching has emerged as an effective professional development model to improve teacher practice. However, most high schools that are investing in instructional coaching are not implementing this resource effectively (Atteberry & Bryk, 2011; Bean & Swan Dagen, 2012; Ippolito, 2009; J. Knight, 2011).

The purpose of this explanatory mixed-method study was to explore how classroom teachers perceived instructional coaching at an urban high school in Pennsylvania. The study measured the relationship of teachers' experience and content assignment to their receptiveness to the instructional coaching process. This analysis focused on understanding perceptions from the classroom teachers' point of view as a way to help increase implementation efforts related to instructional coaching at the secondary level.

Chapter 2: Literature Review

Introduction

Teacher effectiveness has rapidly risen to the top of the education policy agenda. Darling-Hammond and Rothman (2011) reported that educators and policy makers generally agree that ensuring teachers are capable of improving student learning is perhaps the most important step that can be taken to raise student achievement. The quality of each individual teacher remains the most significant variable within a school's influence that affects student learning (Carey, 2004; Isaacs & Magnuson, 2011; Marzano, 2000; Miller, 2003). Federal legislation now requires states to explicitly measure individual teacher effectiveness in order to be eligible for major federal funding initiatives, including Race to the Top.

PDE began implementing a new evaluation model in 2013 in an attempt to measure individual teacher effectiveness and to meet federal funding requirements. The new evaluation system combines teacher observational data with student achievement results. Observation data are collected through a standardized rubric that aligns to Charlotte Danielson's framework for teaching (PDE, 2013). Danielson's framework for teaching, in its original form, is divided into 22 components and 76 subcomponents clustered into the four domains of planning and preparation, classroom environment, instruction, and professional responsibilities (Danielson, 2013).

PDE's new teacher effectiveness scoring system generates a total score by combining three data sets, and this total score determines a teacher's overall evaluation rating for the school year. Fifty percent of a teacher's evaluation score is generated directly from the Danielson observation rubric, 35% is derived from student achievement

data, and the final 15% is determined by the total performance score from the school (PDE, 2014). Figure 2.1 illustrates the makeup and percentages of PDE's teacher effectiveness system. Final evaluation scores that earn an *unsatisfactory* or *needs improvement* trigger a mandatory professional improvement plan, and failure to improve to a proficient or exemplary rating could lead to a loss of licensing and teacher termination (PDE, 2014). The PDE teacher effectiveness model will be fully implemented during the 2014--2015 school year. With new accountability measures centered specifically on teacher effectiveness, districts must focus strategically on effective professional development.

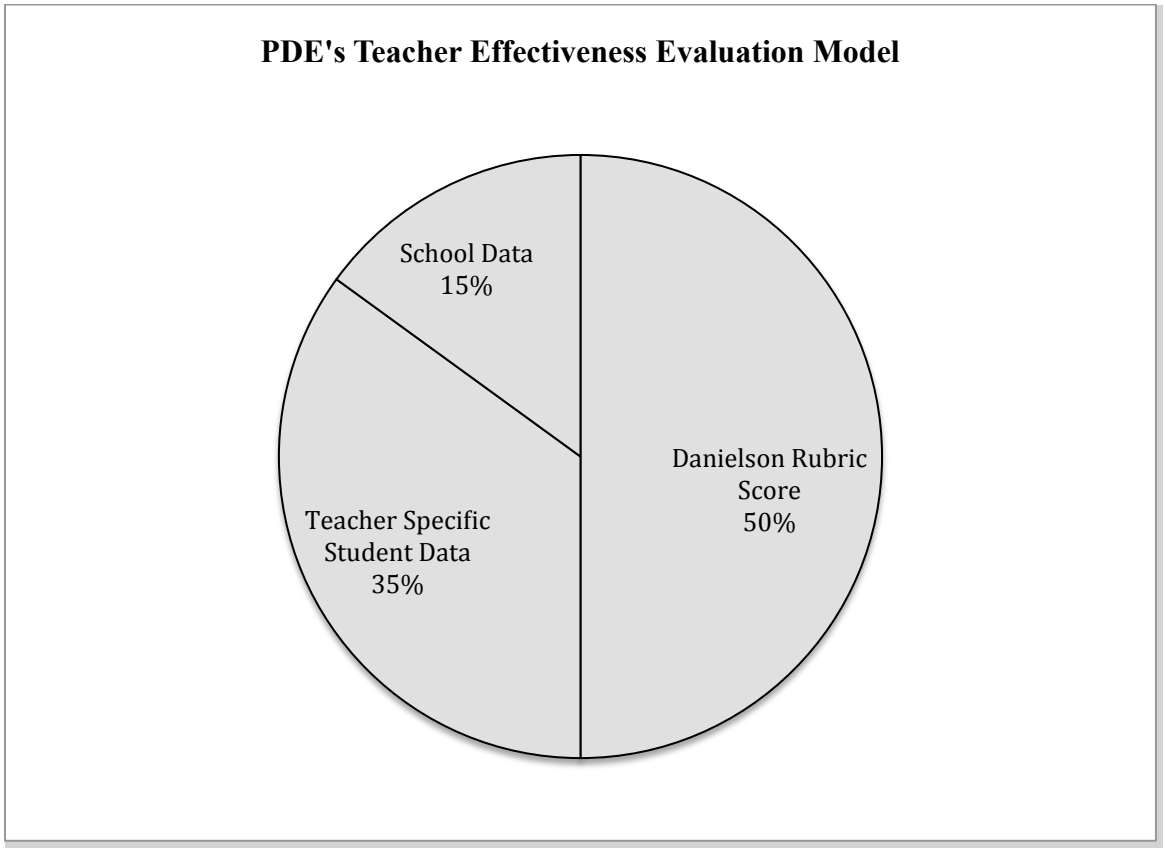

Figure 2.1. Pennsylvania Teacher Effectiveness Model (PDE, 2014).

Teacher effectiveness affects student achievement, and teachers and administration are being held more accountable for student development. Therefore, school districts must budget and strategically plan for effective professional development. A study analyzing three urban school districts' expenditures indicated that they spent between 3.3% and 5.5% of their total operational budgets on professional development, averaging $1,755–$3,529 of expenses per teacher per year (Corcoran, 1995). Unfortunately, nearly all of the teacher training expenses aligned to ineffective, traditional forms of professional development.

Traditional professional development is the most common form of professional development implemented in K–12 school systems, and it has been proven to be ineffective with improving teacher practice (Shanklin, 2007). Therefore, most districts are not maximizing their professional development budgets when utilizing traditional professional development models. Carlisle and Berebitsky (2011) defined a traditional model of professional development as the process where people get together in the same room with a presenter and learn about a topic that is likely linked to the priorities of a school district. The model lacks follow-up training support, and the skills taught in the professional development sessions are rarely measured. Cassidy et al. (2009) reported that teachers only transfer to practice 10% of the skills and strategies learned in a traditional professional development model because skills are taught in isolation with little to no implementation support.

According to Carey (2004), compounding the complexity of teacher effectiveness and traditional professional development is that the highest-risk students are more likely to be scheduled with ineffective teachers. In an Educational Trust achievement gap

research study of students in the public schools at Dallas, Texas, Carey (2004) discovered that higher-risk students were more than twice as likely to be scheduled with an ineffective teacher than their lower-risk peers. Thus, students who were in need of the best teachers were significantly less likely to have a teacher of high quality. According to this study, students who were most in need of help were being systemically sorted into classrooms with the least effective teachers year after year, and higher-performing students who had parental or school advocates were scheduled with the best instructors.

This inequitable scheduling practice is concerning on multiple levels, particularly when coupling teacher effectiveness and professional development research. Marzano (2000) examined the differences between highly effective and ineffective teachers on student learning. Through a comprehensive meta-analysis study for the U.S. Department of Education, Marzano reported that students who were scheduled with ineffective teachers for consecutive years lost substantial academic ground and were not likely to recover. Sanders and Rivers (1996) asserted that there was approximately a 50-percentile achievement point difference between students who had 3 years of effective teachers versus those who had ineffective teachers. Ineffective teachers were in the greatest need of receiving highly effective professional development to transform their practice; however, most K-12 school systems utilize traditional professional development models that have been proven to be ineffective in changing teacher practice.

Fortunately, teacher quality is not a fixed commodity. There are research-based professional development practices that can be implemented to improve teacher practice and respond to the complexities of the new teacher effectiveness evaluation model. Schools must utilize effective professional development processes and ensure that

teachers are given adequate time and support to implement what they are learning into their daily practice (Miller, 2003). Instructional coaching has emerged as a professional development best practice that increases teachers' skill level (J. Knight, 2011). In response to the research on the effects of instructional coaching, recent legislative initiatives have recognized and promoted the essential role that instructional coaching plays in improving teachers' effectiveness (Croft, Coggshall, Dolan, Powers, & Killion, 2010). Darling-Hammond and Rothman (2011) reported in a cross-national comparative analysis of educational opportunity that improving teacher effectiveness through instructional coaching can raise overall student achievement levels because it meets the criterion of an effective professional development framework.

Instructional coaching provides a professional development framework for implementing the eight guiding principles of effective professional development as described by the Consortium for Policy Research in Education (Corcoran, 1995). The eight guiding principles are as follows:

1. Stimulate and support site-based initiatives.
2. Support teacher initiatives.
3. Focus on pedagogy and instructional design.
4. Model constructivist teaching.
5. Create collaborative forums to offer intellectual, social, and emotional engagement.
6. Demonstrate respect for teachers as professionals and adults as learners.
7. Provide time and follow-up support for teachers to master new content and strategies.

8. Professional development is an integral part of teachers' work and must be accessible and inclusive for all students.

Neuman and Wright (2010) compared the results of two groups of teachers completing professional development to improve instructional practice. The 148 teachers from six urban cities were randomly assigned to two groups. The first group received professional development through a traditional modality, and the second group obtained the same content through an embedded instructional coaching model. The group that completed professional development through traditional modalities demonstrated no change in teacher practice. However, the group that received embedded instructional coaching support demonstrated statistically significant, short- and long-term changes in pedagogical practice. This study was significant because it supported the positive effect of instructional coaching in an urban setting.

Teemant, Leland, and Berghoff (2014) measured how instructional coaching affected implementation of a new instructional design model in a quasi-experimental study. They compared implementation results from 36 teachers who received professional development through instructional coaching to a control group that received the same information delivered from a traditional professional development model. The teachers who were instructionally coached had a significantly higher implementation rate in comparison to the control group, particularly when measuring implementation of the most complex strategies. Krupa and Confrey (2012), in a summary presented to the National Council of Teachers of Mathematics, reported that instructional coaching is significant in helping teachers transfer knowledge and skills into practice. Although instructional coaching is effective at changing practice (Borman & Feger, 2006; Joyce &

Showers, 1980; J. Knight, 2007; McCombs & Marsh, 2009; Neuman & Wright, 2010; Vanderburg & Stephens, 2010; Walpole et al., 2010), research suggests that coaching is significantly more expensive than using traditional professional development models.

The cost of instructional coaching is reported to be significantly more expensive than traditional professional development. D. Knight (2012) conducted a cost analysis of three schools implementing instructional coaching and reported that professional development costs were six times more expensive than for traditional professional development models. However, when comparing D. Knight's (2012) instructional coaching cost figures of $3,260 to $5,220 per teacher to Corcoran's (1995) traditional professional development figures of $1,755 to $3,529, the differences did not appear to be as substantial as D. Knight suggested, and his study did not place a dollar value on the amount of instructional time commonly lost when teachers leave their classroom to attend traditional training. In traditional professional development models, teachers commonly leave their classrooms and substitutes are assigned to cover class. In an instructional coaching model, the coach usually works with teachers while the teacher works directly with students during scheduled planning periods. Therefore, students rarely lose contact time with the classroom teacher in an instructional coaching model.

Professional development carries a significant expense, regardless of model. The cost analysis from the two aforementioned financial studies, coupled with the research comparing the effectiveness of instructional coaching to traditional models, suggests that a district should implement the amount of instructional coaching that it can afford. However, prior to investing financial resources into an instructional coaching model, the

implementation challenges of instructional coaching must be further explored (Ippolito, 2010).

The problem is that while instructional coaching has been proven to improve teachers' practice (Borman & Feger, 2006; Joyce & Showers, 1980; J. Knight, 2007; McCombs & Marsh, 2009; Neuman & Wright, 2010; Vanderburg & Stephens, 2010; Walpole et al., 2010), research suggests that most schools that have made financial and human capital investments in instructional coaching are not implementing instructional coaching effectively (Atteberry & Bryk, 2011; Bean & Swan Dagen, 2012; Ippolito, 2009; J. Knight, 2011; McCombs & Marsh, 2009). Atteberry and Bryk (2011), in a 4-year longitudinal study across eight states involving 250 teachers, revealed that on average, instructional coaches only completed 39% of their prescribed teacher collaboration sessions. McCombs and Marsh (2009) in a study of 124 instructional coaches from Florida reported that only 15% of the coaches spent 30% or more of their time working directly with teachers. More than half of the 124 teachers reported that they spent less than 3 hours per week working with teachers. In Bean and Swan Dagen's (2012) comprehensive review of secondary coaching research, they reported that 70% of middle and high school instructional coaches were spending less than 30% of their time working directly with classroom teachers.

Instructional coaching has emerged as an effective option for K–12 schools to improve teacher quality and has become one of the most visible and widely funded forms of school-based professional development in the United States (Ippolito, 2009). In this model, the primary role of an instructional coach is to work directly with classroom teachers to improve pedagogical practice. However, McCombs and Marsh (2009) and

Bean and Swan Dagen (2012) suggested the most pervasive problem with instructional coaching at the secondary level is that most high school coaches are not working directly with classroom teachers for an adequate amount of time. Atteberry and Bryk (2011), Ippolito (2009), and J. Knight (2011) affirmed that the majority of schools attempting to build teacher capacity through instructional coaching have not implemented an instructional coaching process effectively. McKenna and Walpole (2010) measured the differences between high school and elementary coaching models and reported that high school instructional coaches typically have large caseloads of teachers and face departmentalization intricacies that lead to teachers resisting the instructional coaching process. When uncomfortable resistance is encountered, high school instructional coaches typically become more guarded and avoid future collaborative interactions that extend well beyond where the negative experience occurred (McKenna & Walapole, 2010).

The following review of literature addresses three themes of research to gain a better understanding of why most high schools struggle with implementing instructional coaching. The first theme defines and provides the characteristics of effective instructional coaching. The second theme investigates the theoretical underpinnings of adult learning and instructional coaching while exploring creative leadership and design thinking. The third theme examines approaches and models used to implement instructional coaching. The three streams are illustrated in a literature map in Figure 2.2. These three streams provide a foundation for understanding and allow the researcher to explore how classroom teachers' perceptions, years of experience, and departmental

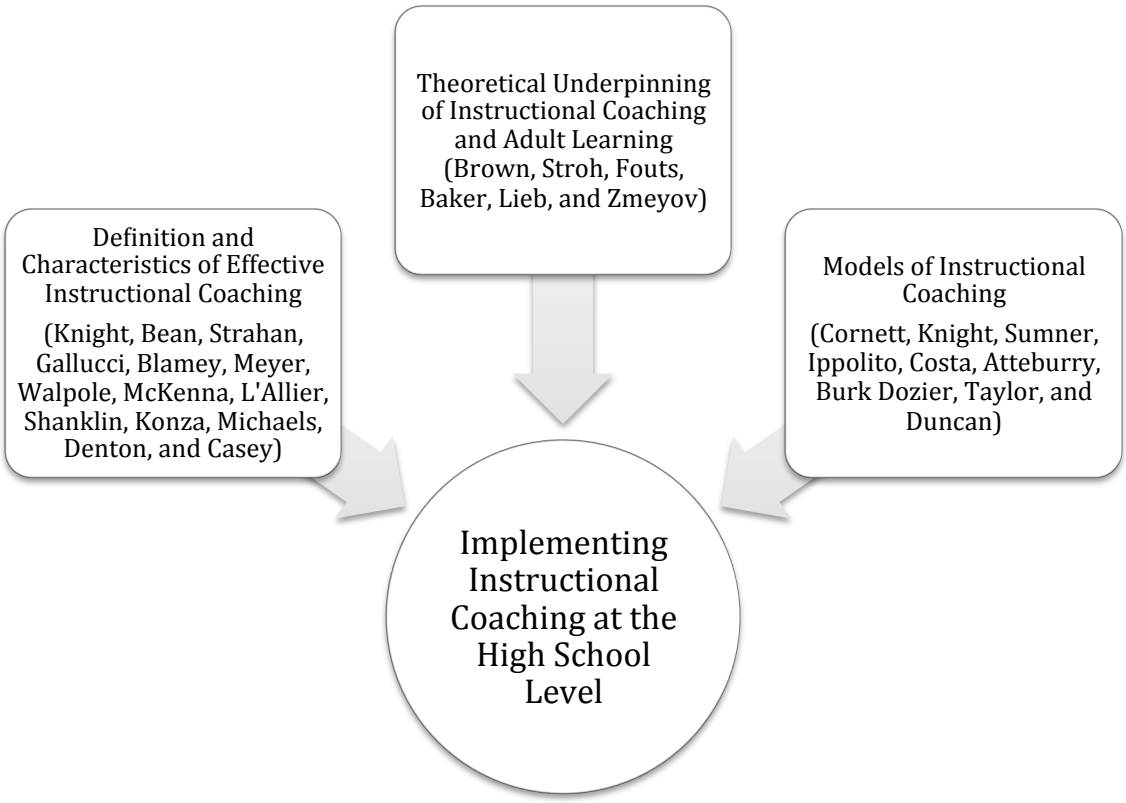

Figure 2.2. Literature map with three streams of research.

assignment affect receptivity and implementation of instructional coaching in an urban high school.

Stream 1: Definition and Characteristics of Instructional Coaching

Strahan et al. (2010), in a case study documenting how participants in an urban high school collaborated to develop an instructional coaching approach, defined an instructional coach as one who (a) helps teachers to recognize what they know and can do, (b) assists teachers as they strengthen their ability to make more effective use of what they know and do, and (c) supports teachers as they learn more and do more. J. Knight (2007), a researcher for the University of Kansas Center of Research on Learning, defined an instructional coach as an onsite professional developer who helps teachers implement instructional best practices across all content areas. J. Knight suggested that an instructional coach should only work with students when they are modeling instructional best practices for teachers. Denton and Hasbrouck (2009), in a 42-school randomized controlled trial that monitored the implementation of instructional coaching, defined instructional coaching as a job-embedded approach to support teachers' learning.

Gallucci, DeVoogt Van Lare, Yoon, and Boatright (2010), in a longitudinal study of three reforming school districts, suggested that in order to build and sustain trust, instructional coaches should never serve in an evaluative role and must remain mindful of their relationships with administration. They indicated that effective instructional coaches are teachers who instruct teachers and rely on their trust, relationships, and expertise to impact pedagogical practice through a collaborative, reciprocal process. Matsumura and Wang (2014), in a multiyear exploratory qualitative study involving 29 schools, asserted that the principal's behavior and understanding of the instructional coaching process had

a profound influence on how classroom teachers worked with and accepted coaching as a viable professional development option.

Blamey, Meyer, and Walpole (2008), in a statewide study of Florida's instructional coaching model, reported that instructional coaches must understand how and why literacy strategies interact with content area learning in English, mathematics, science, and social studies. Instructional coaches work with teachers to develop and model comprehensive lessons, differentiating instruction to meet the specific needs of individual students (Walpole & McKenna, 2007). Casey (2006), drawing on her experience as an instructional coach in New York City's District 2, described the role of an instructional coach as being complex and changing in response to teachers' needs and the culture of the school.

In an unprecedented partnership, the International Reading Association, the National Council of Teachers of English, the National Council of Teachers of Mathematics, the National Science Teachers Association, and the National Council for the Social Studies created standards for middle and high school instructional coaches (Blamey et al., 2008). The standards require middle and secondary coaches to assume the roles of collaborator, job-embedded coach, evaluator of instructional literacy needs, and instructional strategist for English, mathematics, science, and social studies content areas.

L'Allier et al. (2010), in a synthesis of seven separate studies that measured the implementation of instructional coaching, reported that increased frequency of contact between instructional coaches and teachers improved teachers' practice and student achievement. Anderson, Feldman, and Minstrell (2014) affirmed L'Allier et al.'s (2010) findings through a 5-year mixed-methods study on high school science coaching. They

confirmed a strong correlation between improvements in teacher practice and the time teachers and coaches spent together, indicating that 20 hours of collaborative support with a narrow focus had statistically significant effects on long-term teacher practice. Anderson et al. (2014) asserted that in addition to a large investment of time, the quality of the professional relationship between the teacher and coach strongly influenced the rate and level of pedagogical change made by the classroom teacher.

Collaborating with coaches improves teacher practice. Binkley, Keiser, and Strahan (2011) examined three social studies teachers working with an instructional coach to integrate literacy strategies into their daily instruction. Data collected from observation, archival records, interviews, and e-mail exchanges suggested that each teacher improved his or her practice in different ways through collaboration with an instructional coach. Teemant, Wink, and Tyra (2011) evaluated the results of 21 teachers participating in seven individual coaching sessions following a workshop on effective instructional strategies. Following the seven coaching sessions, the findings demonstrated statistically significant improvements in teacher pedagogy, changes in classroom organization, and patterns of teacher growth.

Bean (2010) reported that for an instructional coach to maximize his or her effect on improving teacher practice, the coach must have a strong literacy background, credibility as a successful classroom teacher, quality experience working with adults, and the necessary skill set to facilitate teacher reflection. Similar to Bean, Shanklin (2006), in a review of the Advisory Board of the Literacy Coaching Clearinghouse, identified the following six characteristics of effective coaching:

1. Involves collaborative dialogue for teachers at all levels of knowledge and experience.
2. Facilitates development of a school vision about literacy that is site based and links to district goals.
3. Utilizes data to inform student and teacher learning.
4. Provides ongoing, job-embedded professional learning.
5. Engages in classroom observations that are cyclical and build knowledge over time.
6. Supports rather than evaluates teachers.

A national survey was conducted following the release of the instructional coaching standards to assess how the new standards align to current coaching practice (Blamey et al., 2008). This mixed-method study reported that many coaches were active in collaboration activities; however most lacked the background qualifications and did not participate in data coaching. Although the standards clearly emphasize instructional coaches' critical role in school-wide data analysis, coaches consistently indicated that they lacked the necessary skills in data usage, and most reported that they did not participate in any form of data coaching. This finding is important given that data-driven coaching should inform professional development decisions and the federal emphasis placed on using achievement data to monitor student progress and schools' adequate yearly progress (Blamey et al., 2008).

Konza and Michael (2010) in a 20-school, 2-year multiple-case study mode of inquiry found factors associated with effective and ineffective practices of instructional coaching. Effective practices included strong school leadership, whole-school literacy

planning, literacy implementation across all content areas, collegial trust that led to collaboration and risk taking, and systems to monitor student data. Constraints that inhibited instructional coaching implementation included teacher resistance linked to a perceived lack of experience and expertise of the instructional coach, confusion over the role of an instructional coach, teacher union resistance, and staffing shortages.

To conclude, defining and identifying the common characteristics of instructional coaching while providing evidence of effectiveness provided a deeper level of understanding of why specific characteristics are recommended for instructional coaching to be successfully implemented. This review of definitions and characteristics was intended to strengthen the researcher's ability to explore and compare the characteristics and protocols of the coaching model that he studied. Defining the characteristics of instructional coaching provided insight on *what* instructional coaching is. Exploring the theoretical underpinnings of instructional coaching in the following stream of research will explain *why* instructional coaching has emerged as a research-based professional development best practice.

Stream 2: Theoretical Underpinnings of Instructional Coaching

Andragogy is a theory that holds a set of assumptions about how adults learn. Understanding andragogy helps to identify adults' learning needs and provides insight into why most high schools are unsuccessful with having instructional coaches work directly with classroom teachers for an adequate amount of time. According to Lieb (1991), part of being an effective professional developer involves understanding how adults learn best. The limited research on schools that are struggling with instructional coaching resistance suggested deficits with respecting the basic principles of adult

learning (Konza & Michael, 2010). Zmeyov (1998) reported that andragogy is designed around six key principles. The six key principles are as follows:

1. Adult learners are internally motivated and self-directed.
2. Adults bring life experiences and knowledge to learning experiences.
3. Adults are goal oriented.
4. Adults are relevancy oriented.
5. Adults are practical.
6. Adult learners must be respected.

According to Borman and Feger (2006), there are a few salient theoretical frameworks that have emerged in the instructional coaching literature. In their comprehensive literature review of instructional coaching research, they reported that several studies characterize coaching as a consultative exchange wherein knowledge is coconstructed by professional equals using a collaborative process. Their review also found examples where instructional coaching was behavior based, transferring knowledge from experts to novices in a direct coaching approach.

Borman and Feger's (2006) review of the literature surfaced two conflicting ideologies on how teacher beliefs affect instructional change. The first ideology indicated that teachers change instructional practices only after their personal beliefs change. The second ideology conversely reported that teacher perceptions regarding the coaching process only change after they observe concrete changes in student patterns of learning. The first ideology suggests that teachers would have to believe in instructional coaching before they could implement instructional coaching, and the second ideology infers that

teachers will only consider instructional coaching after experiencing coaching and observing evidence that the process effectively changes student learning and behavior.

C. Brown, Stroh, Fouts, and Baker (2005) through an examination of coaching research identified four major theoretical positions that serve as a framework for instructional coaching models. The four theories include cognitive information processing theory, social interaction learning theory, adult development theory, and organizational theory. The first three theories focus on the individual teacher and are cognitive-based theories, whereas the fourth is an organizational theory with a focus on whole systems. A collaborative approach to learning is identified as necessary in each of the four theoretical frameworks. The four theoretical models for coaching and adult learning are illustrated in Table 2.1 and are summarized below.

The cognitive information processing coaching theory proposes that in order to effect change in teacher practice, instructional coaching should focus on eliciting and examining the thoughts and decisions that a teacher makes when delivering instruction (Costa & Garmston, 2002). Costa and Garmston asserted that teachers' thought processes and beliefs determine how teachers teach their subjects. The cognitive/information processing approach of coaching is intended to change the internal beliefs of the teacher in order to change the instructional behaviors/practices of the individual (C. Brown et al., 2005). In this cognitive process, an instructional coach utilizes a variety of reflective coaching techniques to elicit metacognitive reflection to change teacher thinking.

Social interaction theory emphasizes the importance of collaboration to build adult capacity. Adults engaging in collaborative conversations result in deeper levels of thinking and understanding (C. Brown et al., 2005). In this approach, the instructional

Table 2.1

Theoretical Models for Coaching

Approaches	Purpose of coaching	Role of coach
Cognitive/Information Processing Theory A learning orientation that places emphasis on helping people to understand their thought processes and to think clearly for rational decision making	To focus on the intentional thought processes of the individual and to change the inner thinking of the learner, which will lead to overt behavior changes	To employ various techniques, such as challenging, clarifying, and inciting metacognition to aid the learner in clarifying and improving inner thought processes, leading to behavioral changes.
Social Interaction Learning Theory Social interaction is seen as a vital component for cognitive development. Learning is understood as a reciprocal experience benefiting all involved by moving the participants to deeper levels of thinking and understanding.	To create an environment where adults can engage in collaborative conversations, thereby leading participants to deeper levels of thinking and understanding.	To facilitate collaborative conversations among peers, including the coach, that focus on collaborative dialog, problem-solving exercises, and shared experiences.
Adult Development Theory Adults face various personal and social development stages, and activities should be designed to help move the learners through these stages.	To help adult learners to move to the next social or cognitive level.	To structure interactions and learning opportunities that facilitate movement through the various stages of development.
Organizational Management Theory Organizations are not made up of independent entities but of relationships among entities. Comprehensive strategies must be used that impact all components of the organization.	To help participants understand the interrelationships and to help develop aligned procedures to lead to systematic change throughout organization.	To help develop an understanding of the organization as a system of interrelated parts and to provide ways to align those parts toward improved efficiency.

Note. Adapted from *Learning to Change: School Coaching for Systemic Reform*, C. J. Brown, H. R. Stroh, J. T. Fouts, & D. B. Baker, 2005 (Seattle, WA: Fouts and Associates), p. 33.

coach facilitates collaborative conversations among peers that focus on problem solving and shared experiences, allowing teachers to browse, borrow, and build off of one another's experiences.

The social interaction approach is rooted in Vygotsky's social development theory, suggesting that full cognitive development requires social interaction (Wertsch, 1985). In this approach, social interaction plays a fundamental role in the development of cognition. The theory suggests that the potential for learning and development depends upon the learner's zone of proximal development and that full development may only be reached through social interaction. Wertsch (1985) suggested that the range of skill that can be developed through peer collaboration far exceeds what an individual learner can attain.

The adult development theoretical approach is intended to help adult learners progress through the cognitive levels of learning utilizing a collaborative approach (C. Brown et al., 2005). In this method, a coach recognizes and embraces the developmental stage of each individual teacher and differentiates his or her movement through each phase of adult learning. An assumption of adult learning theory is that changing one's perception leads to different ways of knowing and behaving. This theory is commonly demonstrated when instructional coaches and teachers meet one-on-one to focus specifically on individual needs and to increase understanding and empathy for the challenges of one another's roles through active listening.

The organizational management theory focuses on whole-system transformation. This management theory is designed to help teachers and instructional coaches understand the interrelationships within the organization and to design policies and

practices that result in dynamic systemic change (C. Brown et al., 2005). An instructional coach using an organizational management approach can help develop awareness of the interdependency of the organization and provide ways to align systems toward improvement. Fullan (2010) articulated how transformation efforts accelerate when systems are aligned, simplified, and interrelated, and Senge (2008) reported that internal and external systems must work together to create a sustainable, continually improving world.

The work of C. Brown et al. (2005) illustrates the significance of social learning as it relates to teacher development. Organizations construct both human and social capital through collaborative capacity building. Leana (2011) supported C. Brown et al.'s findings in her 2009 research on collaboration and system reform, indicating that social capital is the missing link to comprehensive school improvement. The study she referenced (Pil & Leana, 2009) provides strong empirical evidence regarding the significance of collaboration and social capital. In a large-scale mixed-methods study, Pil and Leana examined two groups of teachers with similar professional credentials and measured how their social behaviors affected student learning. One group of teachers worked and taught in isolation, a common approach in most secondary settings, and the second group of teachers actively collaborated and planned with one another. Pil and Leana discovered that students who had teachers who routinely collaborated and planned with one another (high social capital) significantly outperformed students who had teachers with the same professional credentials but did not collaborate with colleagues (i.e., had low social capital). This study is important for policymakers and administrators

to understand the effect of social capital on teacher development. It provides insight into the leadership and systems necessary to support instructional coaching and collaboration.

Organizational structures and leadership models affect the implementation of coaching. Models must be designed to support creativity, collaboration, and risk taking. Fullan (2010); Puccio, Mance, and Murdock (2011), and Senge (2008) asserted that organizational systems must be open and learn from one another and that creativity is a core leadership competence. They emphasized that creativity and empathy emerge through system collaboration and are necessary for long-term organizational sustainability. They defined creative problem solving as an outcome of collaboration and risk taking that improves the likelihood of sustainability.

In order to support coaching, school leaders must not only rely on their own creativity but must also be adept at facilitating the creative thinking of others, which implies that they posses the ego strength to admit that do not have all the answers and the open-mindedness to entertain and support other ideas (Puccio et al., 2011). Greenberg-Walt and Robertson (2001) identified open-mindedness and the ability to listen and observe as characteristics of effective leaders. Scharmer (2009) reported that leaders must suspend a voice of judgment, cynicism, and fear about instructional coaching in order for a sustainable future with coaching to emerge. Kouzes and Posner (1995) identified five leadership practices that promote the systems of collaboration necessary to implement an instructional coaching model:

1. Challenge/rethink operations: Look for innovative ways to improve the organization.

2. Inspire a shared vision: Create an ideal image of what the organization can become.
3. Enable others to act: Build a spirited team.
4. Model key principles: Establish principles for how people will be treated and how goals will be pursued.
5. Encourage from the heart: Make people feel valued.

The creative problem solving (CPS) model is a comprehensive system built on the natural creative processes that deliberately ignite creative thinking and, as a result, produce creative solutions (Puccio et al., 2011). The CPS process focuses on thinking and doing. CPS influences how people think about themselves and the world around them in relation to change and improves individual and team performance for problems that appear to have no immediate solution.

The principles and systems of creative leadership are important for instructional coaching because the leadership structure affects adult motivation and the overall implementation efforts of instructional coaching. Pinks (2009) described Harlow and Meyer's research, reporting that adults are primarily motivated through experiences that provide purpose, opportunities for mastery, and autonomy, and need to work in a system that promotes problem solving through collaboration. Matsumara and Wang (2014), in an exploratory, multiyear qualitative study of a principal's effect on the implementation of instructional coaching, described how principals' views on collaboration and the importance of the teaching practices being learned have a direct influence on how coaches are valued and received by classroom teachers.

The theoretical underpinnings of instructional coaching and adult learning coupled with system-based leadership and motivation provide for a conceptual understanding of why instructional coaching works and what structures are necessary to enhance its effect. An infrastructure of trust, respect, collaboration, and risk taking is necessary to create the collegial environment needed to implement instructional coaching. The final stream of research reviews how coaching is implemented by exploring the research on the different types of and approaches to instructional coaching.

Stream 3: Instructional Coaching Approaches

Coaching is commonly labeled as peer coaching, cognitive coaching, literacy coaching, or instructional coaching (Cornett & Knight, 2009). Although there are minor differences associated with each label, the philosophical base of high-quality, job-embedded professional development is identical in each description (Sumner, 2011). Coaching dedicates extended time to the examination of instructional practice and attempts to connect teachers to create networks that enhance social capital and information flow. Coaching develops trust, instills collective responsibility, imparts an innovation orientation, and provides an example of professionalism around instructional practice (J. Taylor, 2008, p. 22).

There are minor differences in the four common descriptions of coaching. Peer coaching is the oldest description of educational coaching and involves classroom teachers mutually supporting one another in informal settings with planning and resource development (Swafford, 1998). Cognitive coaching provides a coach for mentoring and facilitates teacher development through higher-order thinking (Costa & Garmston, 2002). Literacy coaching provides a specific focus on increasing literacy across all content areas

(Shanklin, 2007), and instructional coaching focuses on encompassing all research-based instructional best practices (J. Knight, 2007). The greatest differences in coaching are identified with how schools approach implementation of the coaching process.

Building on recent studies of instructional coaches' relationships with teachers, Ippolito (2010), in an empirical study of an East Coast public school district that included more than 50,000 students, 140 schools, and 78 coaches, described how instructional coaches balance responsive and directive coaching. Responsive coaching is described as coaching teachers for self-reflection, and directive coaching is working with a teacher for implementation of specific practices or tasks. Costa and Garmston (2002), Dozier (2006), and Duncan (2006) suggested that it is most effective for coaches to operate primarily from a responsive position, specifically focusing on teacher self-reflection to adapt instructional practices.

Although responsive coaching is most effective in changing teacher practice, a responsive coaching model is normally not considered when schools invest resources to implement instructional coaching. Most schools implement coaching with the immediate goal of quickly changing teachers' practices in order to see an increase in student achievement (Ippolito, 2009). Ippolito's qualitative study of responsive and directive coaching practices appears significant for policy makers and administrators. The study revealed that coaches were able to clearly distinguish between responsive and directive coaching activities and that teachers were more apt to accept and seek responsive coaching to change practice. Coaching that was more directive, such as asking teachers to analyze assessment data or to follow specific programmatic/administrative guidelines,

produced anxiety and was often avoided by teachers and coaches altogether (Ippolito, 2009).

The Education Alliance at Brown University reports that responsive versus directive coaching may not affect coaches' core activities, such as lesson demonstration and coplanning, but it does appear to influence the ways that instructional coaches work and with whom they work (Borman & Fegar, 2006). They reported that with responsive instructional coaching models, coaches often had to market instructional coaching to build teacher clientele and trust and to gradually establish high-impact collaborative interactions. Directive coaching had less of a focus on relationship building and understanding regarding what needed to be implemented.

Teacher resistance and differing expectations of administrators surfaced as a prevailing topic in the research involving instructional coaching approaches, particularly with directive coaching models. In directive coaching programs, instructional coaches reported they were perceived by colleagues as supervisors and were not trusted by colleagues (Borman & Fegar, 2006). In this analysis, Borman and Fegar reported that most administrators lacked a clear understanding of instructional coaches' roles and commonly reinforced the view that instructional coaches served primarily in a teacher evaluation function. This lack of understanding by the administration is significant based on the findings of Matsumura and Wang's (2014) study involving 29 schools, which asserted that the principal's understanding of the instructional coaching process had a profound influence on how classroom teachers accepted coaching as a viable professional development option.

Richard (2003) and Symonds (2002) reported that instructional coaches encountered significant resistance, especially from veteran faculty members when using a directive model. Borman and Fegar (2006) asserted that administrative behavior and lack of clarity on instructional coaching may be one explanation for a high level of teacher resistance toward coaching. Rivera, Burley, and Sass (2004), in a 29 urban school study involving 177 teachers, reported that ambiguous expectations of the instructional coaches' roles not only lead to confusion and conflict among instructional coaches, but it also demonstrated adverse effects on the quality of the coaching practice throughout the entire school.

Whether a school implements a directive or responsive coaching model, clarity of instructional coaching roles and administrative understanding of expectations are essential to maximizing effectiveness. Ertmer et al. (2003), in a mixed-methods study of 31 instructional coaches, reported that over time teacher resistance to instructional coaching decreased. Resistance commonly decreased through positive word-of-mouth. Role clarity of the instructional coach and firsthand experiences of coaches' effectiveness increased. Ertmer et al. suggested that the best way to overcome resistance is to have an internal communication plan and to train administrators and teachers on the role and purpose of instructional coaching before and during implementation.

Many major urban districts including New York, Chicago, Boston, and Los Angeles, as well as the entire state of Florida, have committed large investments to school-based professional development anchored in the work of instructional coaches (Atteburry & Bryk, 2011). Yet, clinical and theoretical accounts about the role and responsibilities of instructional coaches (Bean & Carroll, 2006; Showers & Joyce, 1996;

Walpole & McKenna, 2004) suggest that instructional coaching is a complex practice that is difficult to implement well.

Atteburry and Bryk (2011) conducted an extensive, 4-year theory-based quantitative investigation to analyze implementation of instructional coaching. The study investigated instructional coaches' and teachers' participation in the Literacy Collaborative (LC). The LC is a national coaching framework that has been operational for over 15 years, with clear implementation and training guidelines. The study involved 250 teachers from 17 schools across eight states. In the LC model, one-to-one classroom coaching is the primary work and responsibility of the instructional coach, and teachers are to receive two coaching sessions per month (Atteburry & Bryk, 2011). However, the study revealed that, on average, eligible teachers received less than one (0.79) coaching session per eligible month from the instructional coach, with many teachers receiving no coaching. This study is important because it demonstrated how fidelity to implementation of instructional coaching is a significant variable impacting overall effectiveness.

The South Carolina State Department of Education (SDE) developed the South Carolina Reading Initiative (SCRI) to implement instructional coaching. The SCRI provided three levels of support (university faculty, regional literacy coach, and state department liaison) for instructional coaches. Each instructional coach supported 40 teachers (10 teachers from four different schools). Coaches spent 4 days per week in classrooms helping teachers experiment with practices that they were learning in study groups. Coaches supported teachers by demonstrating strategies, conferring about how to best match instruction to students' needs, and sharing instructional resources. Throughout this 3-year process of having a consistent regional and state network to systemically

support coaches and coaches to systemically support teachers, results indicated that the teachers' beliefs and practices changed through instructional coaching, aligning to what the field considered to be the best literacy practice (Stephens et al., 2011). This study is relevant because it provided evidence of a large-scale coaching system that can affect teacher effectiveness.

Summary

Teacher effectiveness has rapidly risen to the top of the educational reform agenda because teachers' skill level has a significant effect on student learning and development. Although districts must invest substantial financial resources into professional development to ensure teacher quality, traditional professional development has been proven to be ineffective. Instructional coaching, although more expensive than traditional professional development, is significantly more effective because the model provides routine support when implementing new initiatives. However, most school districts that invest human and financial resources into instructional coaching are unsuccessful with implementing coaching at the high school level.

This synthesis of the literature focused on researching the characteristics, theoretical frameworks, and models of instructional coaching. The narrow focus helped identify *what* is effective coaching, *why* instructional coaching works, and *how* coaching is implemented in a high school setting. This concentration provided the researcher with the background information needed to conduct a study on how classroom teachers' perceptions, years of experience, and departmental assignment affect receptivity and the implementation of instructional coaching in an urban high school.

Instructional coaches must have credibility as a successful classroom teacher, quality experience working with adults, a strong literacy and pedagogical background, and the necessary skill set to facilitate teacher reflection. The characteristics of an effective instructional coaching process include

1. Collaborative dialogue and planning with all teachers at all levels of knowledge and experience.
2. Development of a school vision about literacy that is site based and links to district goals.
3. Data analysis to inform student and teacher learning.
4. Ongoing job-embedded professional learning aligned to strategic goals.
5. Engagement in classroom observations that are cyclical and that build knowledge over time.
6. Support, rather than evaluation, of teachers.

There are four instructional coaching theories. The four theories include cognitive/information processing theory, social interaction learning theory, adult development theory, and organizational management theory. The first three theories have strong connections to andragogy, and the fourth theory is associated with creative systems thinking and supporting a collaborative work environment. Understanding andragogy identifies how adults prefer to learn and provides insight into why most high schools are unsuccessful in having instructional coaches work directly with classroom teachers for an adequate amount of time. The key principles of andragogy are as follows:

1. Adult learners are internally motivated and self-directed.
2. Adults bring life experiences and knowledge to learning experiences.

3. Adults are goal oriented.
4. Adults are relevancy oriented.
5. Adults are practical.
6. Adult learners must be respected.

High schools that struggle with implementing instructional coaching commonly have deficits with respecting one or more of the basic principles of adult learning.

Instructional coaches are also commonly referred to as peer coaches, cognitive coaches, or literacy coaches. Although there are slight differences within each of the four descriptions, the philosophical foundation of high-quality, job embedded professional development is identical in each description.

There are three common approaches to how schools implement coaching: the responsive, directive, and balanced models. The responsive model includes a strong emphasis on relationships. The model is nonevasive and is driven by classroom teachers' perceptions of need. This is commonly the preferred model by classroom teachers and instructional coaches. Directive coaching is more authoritative where the focus is primarily on an end product based on a mandatory initiative. The balanced approach combines components of both the responsive and directive approaches. In a balanced model, the end goal is typically predetermined by the school district or state mandates. But how the goal is achieved evolves through collaborative dialog between the instructional coach and teacher.

To conclude, there is a gap in the research on how classroom teachers perceive instructional coaching and how years of experience and departmental assignments affect receptivity and implementation of instructional coaching at the secondary level.

Understanding perceptions of teachers who are afforded the opportunity to receive instructional coaching may help coaches appropriately target the most receptive teachers and increase implementation efforts. Examining teachers' perceptions about coaching allowed the researcher to measure whether or not content area certification and/or years of experience affect receptivity and the implementation of instructional coaching within a high school setting. Analyzing the data generated relational patterns of receptivity, which may assist high schools with increasing implementation efforts.

Seventy percent of high schools struggle to implement instructional coaching effectively. Often, due to large caseloads instructional coaches have to decide where to invest their limited amount of time. If high school coaches can avoid resistive teachers, then they will be more likely to spend an adequate amount of time with teachers who want to improve their practice through a collaborative coaching process.

Chapter 3: Research Methodology

Introduction

The central focus of this explanatory mixed-methods research study was to explore how classroom teachers perceived and experienced instructional coaching at a Pennsylvania urban high school. The study also measured the relationship of teachers' experience and content assignment to their receptivity to the instructional coaching process. Understanding teacher perceptions and the relationships that affect receptivity to instructional coaching is significant because it may help school districts increase the amount of time that coaches work directly with teachers. Instructional coaching is a research-based best practice that improves teacher skill level and increases student achievement (Anderson et al., 2014; Vanderburg & Stephens, 2010). However, most high schools that attempt to utilize instructional coaching to transform teacher practice do not implement coaching effectively (J. Knight, 2011).

The problem with instructional coaching implementation has been clearly identified. However, there are gaps in the research with how high school teachers perceive instructional coaching and the relationship of teachers' experience and content assignment to their receptiveness toward coaching. If patterns of receptivity and resistance can be identified, then it may help instructional coaches maximize their time and interactions with teachers, particularly during the initial phases of implementation.

Increasing the time that instructional coaches work directly with teachers is important because correlations have been found between the amount of time an instructional coach and teacher collaborate on long-term changes in instructional practice and increases in student achievement (L'Allier et al., 2010). Information obtained from

measuring and exploring teachers' perceptions and receptivity to coaching may assist instructional coaches in avoiding the high levels of resistance that commonly lead to school-wide implementation failure.

The central research question of this explanatory mixed-methods study was, How do classroom teachers perceive instructional coaching at an urban high school in Pennsylvania? Qualitative teacher interviews were utilized to explore this overarching question, along with the following quantitative subquestions:

1. What is the relationship between a classroom teacher's content area assignment and receptivity to instructional coaching?
2. What is the relationship between a classroom teacher's years of experience and receptivity to instructional coaching?

Research Design and Rationale

This explanatory mixed-methods research analysis was designed to explore how classroom teachers perceive instructional coaching at an urban high school in Pennsylvania. The study also measured the relationship of teachers' experience and content assignment to their receptiveness to the instructional coaching process. The explanatory mixed-methods research approach increased the overall strength of the study because it blended both quantitative and qualitative information to provide context and deeper meaning to the data collected. According to Creswell (2012), a sequential explanatory design allows quantitative results to inform the qualitative data collection process. A mixed-methods sequential explanatory design has two stages: quantitative followed by qualitative (Creswell, 2007). In this design, a researcher first gathers and investigates the quantitative data. Then, following the quantitative analysis, qualitative

data are collected and explored to provide meaning and to elaborate on the quantitative results. The qualitative process is driven by the quantitative results, and the two phases are connected through the analysis of the study. The basis for this method is that the quantitative data provide a general understanding of the research problem (Ivankova, Creswell, & Stick, 2006). Therefore, for this study, the quantitative analysis of coaching provided a foundation for the qualitative exploration, and the qualitative investigation provided context and understanding of the experiences that could not be captured through a survey.

Quantitative data about how teachers perceive instructional coaching were first collected and analyzed through the use of an adapted published survey. The survey was designed to measure the effects of instructional coaching through the perceptions of classroom teachers. The results of the quantitative analysis were used during the qualitative exploration, where the researcher attempted to capture the phenomenon of coaching through the experiences of classroom teachers by using a phenomenological approach.

A phenomenological methodology was used to collect qualitative data on how teachers experienced the phenomenon of instructional coaching. The phenomenological approach was utilized because, as Creswell (2007) described, the researcher wanted to understand the essence of the phenomenon (instructional coaching) through teachers who shared similar coaching experiences. The researcher interviewed three classroom teachers following the quantitative data analysis. Moustakas (1994) suggested that the aim of a phenomenological approach is to determine meaning from the view of participants who have shared similar experiences. He indicated that while bracketing assumptions, through

dialog, descriptions emerge that provide a reflective analysis of the experience being studied.

Interviewing three high school teachers who have shared experiences of receiving instructional coaching at a high school level allowed the researcher to explore the meaning of the coaching phenomenon through the lens of the participants. A representative from each content area and experience category was strategically selected for in-depth perception interviews. Table 3.1 illustrates how content areas and years of experience were represented in the interview process. The small group of interviewees included male and female subjects. One classroom teacher was African American and the other two were Caucasian. The forthcoming data analysis subsections provide explicit detail of how data were collected and measured. Each classroom teacher was interviewed multiple times to capture perceptions of the coaching experience.

Table 3.1

Teacher Interview Selection

	1–10 years of experience	11–20 years of experience	21 or more years of experience
Humanities teachers	X		
Math and science teachers		X	
Elective teachers			X

The findings that emerged through the interview process provided context for the quantitative findings along with additional insight into the strengths and challenges of implementing instructional coaching at the high school level. The interviews allowed the researcher to explore what classroom teachers believed to be the benefits of coaching, the necessary skill sets of an instructional coach, and the challenges of implementing coaching at the high school level. The interviews also investigated teacher receptiveness to the instructional coaching process as a professional development model and what coaching practices had the greatest effect on changing teacher practice.

Site and Population

Population Description

The target population for this study was 107 high school classroom teachers who average 14.10 years of experience. According to PDE (2014), 100% of the teachers were considered highly qualified. Fifty-eight teachers were female, and 49 were male. The ethnicity of the teaching staff was as follows: 94% were Caucasian and 6% were African American. Table 3.2 illustrates the demographics and qualifications of the site's population. The teachers at the research site have the ongoing option to use instructional coaching to improve instructional practice, but participation is voluntary. Instructional coaching has been a professional development option at the research site for the past 4 years.

The pilot study focused specifically on the qualitative component of this mixed-methods study. The instrument that was utilized to collect quantitative data had been used in previous instructional coaching studies and had proved to be reliable. Please review Appendix C for the Construct Reliability and Validity Report from the Teacher

Table 3.2

Site Population

	Total number of teachers by gender	Total number of culturally diverse teachers	Percentage of teachers highly qualified
Female teachers	58	2	100%
Male teachers	49	4	100%

Reflection Impact Survey (TRIS). Therefore, the qualitative interview questions were first reviewed by professional colleagues and then piloted with two former high school teachers who were no longer at the high school but had participated in instructional coaching when they worked at the research site. The research concluded from the results of the pilot study that the interview questions were appropriate for the research study.

Site Description

The high school was classified as an urban school located in Pennsylvania. The school served Grades 9–12 and had 1,609 students. Over 50% of the students were classified as economically disadvantaged, and approximately 30% were from ethnically diverse backgrounds. Nineteen percent of the student body received special education services, and students who were identified as having extenuating needs were eligible to receive educational services until 21 years of age.

Based on the No Child Left Behind (NCLB) 2010 adequate yearly progress (AYP) report (PDE, 2011), the school was in Corrective Action II, Year VII and was eligible for state takeover due to low academic performance in mathematics (49%) and reading (59%), along with a below-average graduation rate (78%). According to the

Pennsylvania Value-Added Assessment System (PVAAS), the high school was ranked in the bottom 4% of the Commonwealth, demonstrating significant evidence that the school was not meeting the standard for academic growth (PDE, 2011).

Since 2011, the high school has been implementing a transformational school improvement plan with instructional coaching as a core component of its strategic blueprint. In 2012, the school made AYP for the first time in over 10 years by demonstrating double-digit academic growth gains in both reading and mathematics on the Pennsylvania System of School Assessment (PSSA) exams and by meeting all 25 NCLB AYP benchmarks. In 2013, the school exited corrective action status with the PDE by demonstrating double-digit proficiency gains on state assessments for a second consecutive year (mathematics/algebra, 69.4%, and reading/literature, 79.47%). The 2013 PVAAS data report (PDE, 2013) indicated that there was significant evidence that the school exceeded the standard for academic growth in all measured areas. In addition to improving students' academic performance, the school increased its graduation rate to 85% and observed a decrease in serious behavioral incidents. In 2013, PDE altered how it measured school performance. The high school's inaugural school performance profile (SPP) score was 79.8. In 2014, the school earned an SPP score of 80.6 after demonstrating double-digit growth gains for a third consecutive year in mathematics.

Site Access

The superintendent of schools authorized access to the participant pool and research site, and the written authorization may be found in Appendix G. The researcher is a former principal of the high school where the study was completed, and he has sustained a close working relationship with the school district. The researcher now works

for a college, but through a dual enrollment initiative that partnered the college and high school, he continues to work closely with the school's new principal and central office administration.

Research Methods

Instrument

The Teacher Reflection and Impact Survey (TRIS) was originally designed to measure the perceived effects of instructional coaching in mathematic classrooms. The TRIS was created by the Examining Mathematics Coaching (EMC) project at Montana State University and RMC Research Corporation. This Likert-scale survey was created specifically to measure the impact of instructional coaching from the perspective of classroom teachers receiving mathematical instructional coaching support (Yopp, Burroughs, & Sutton, 2010). The instrument is supported by the National Science Foundation (NSF) and was previously utilized to examine teachers' mathematical development through instructional coaching for science, technology, engineering, and mathematics (STEM) programs. For this proposed study, authorization was obtained to make adaptations to the TRIS to include all high school teachers and all content areas. The original TRIS form is presented in Appendix A. The Adapted TRIS form may be found in Appendix B. Documentation of consent to utilize and modify the instrument may be found in Appendix E.

According to the Construct Reliability and Validity Report (Yopp et al., 2010), the TRIS includes 34 questions and is divided into three separate categories to measure the effect of instructional coaching on the perceptions of the classroom teacher. The three categories of the TRIS include (a) relationships between coach and teacher (five

questions), (b) characteristics of instructional coaching (16 questions), and (c) the perceived impact of the coaching process (13 questions). The Construct Reliability and Validity Report may be found in Appendix C.

The adapted TRIS was administered via SurveyMonkey to 107 classroom teachers from one Pennsylvania urban school that had access to instructional coaching support. The survey was intended to explore teachers' perceptions and receptiveness to the instructional coaching process. A uniform resource locator (URL) linked to the adapted TRIS survey was presented to all high school classroom teachers by e-mail. SurveyMonkey provided a confidential research platform along with anonymity for participants while affording the researcher a practical forum to organize and analyze responses.

The adapted TRIS provided data on relational and perceived effects while identifying characteristics of the coaching model being implemented. These data allowed the researcher to compare perception results by content area and years of experience in each of the three TRIS categories (relationships, characteristics, and impact). The adapted TRIS included four questions measuring teacher-to-coach relationships, 16 questions assessing the characteristics of the coaching model being implemented, and 12 questions exploring how coaching impacts teacher practice. The adapted TRIS may be found in Appendix B.

Following the collection and evaluation of the adapted TRIS data, a phenomenological approach was used to interview three classroom teachers about how they experienced the phenomenon of instructional coaching. A standard interview protocol was followed. Interviews provided a context for the adapted TRIS data results

and allowed the researcher to explore classroom teachers' personal perceptions about the instructional coaching process. Interviews were recorded and transcribed. Common codes and themes were identified through an open coding process. The phenomenological approach was utilized because, as Creswell (2007) described, the researcher wanted to understand the essence of coaching through teachers who shared the same experience. This approach also provided an opportunity to examine what teachers believed about coaching in relationship to their own professional learning. The interview questions may be found in Appendix D.

Data Analysis Procedures

The central research question of this explanatory mixed-methods study was, How do classroom teachers perceive instructional coaching at an urban high school in Pennsylvania? Qualitative teacher interviews were utilized to explore this overarching question, along with the following quantitative subquestions:

1. What is the relationship between a classroom teacher's content area assignment and receptivity to instructional coaching?
2. What is the relationship between a classroom teacher's years of experience and receptivity to instructional coaching?

A description of the research questions, approaches, data collection, and analysis methods may be found in Table 3.3. The central research question was explored by interviewing three classroom teachers multiple times about their experiences with instructional coaching. These interviews followed the calculations of the adapted TRIS survey results, and a phenomenological approach was used. This process provided context for the adapted TRIS results and allowed the researcher to gain direct insight into

Table 3.3

Research Questions

Research questions	Mixed methods	Data collection	Data analysis
How do classroom teachers perceive instructional coaching?	Qualitative phenomenological	Standard interview protocol	Open coding
What is the relationship between a classroom teacher's content area assignment and receptivity to instructional coaching?	Quantitative	Adapted TRIS survey	Kruskal-Wallis test and one-way ANOVA
What is the relationship between a classroom teacher's years of experience and receptivity to instructional coaching?	Quantitative	Adapted TRIS survey	Kruskal-Wallis test and one-way ANOVA

the phenomenon of instructional coaching through the experience of teachers who receive coaching. The interviews explored what teachers believed were the necessary skill sets of a coach, the most effective characteristics of the coaching model being implemented in their school, the challenges with implementing coaching at the high school level, and the perceived effects of coaching. Strategic selection of teachers provided representation from each content area and the years of experience category being measured. The small group of interviewees included male and female subjects. One classroom teacher was African American, and the other 2 teachers were Caucasian. A standard interview format was used to gain insight directly from classroom teachers, and the open coding process was used to make meaning of the transcripts and identify common themes.

The two subquestions compared the relationship of teachers' experience and content assignment to their receptiveness toward coaching. The independent variable for the first subquestion was content area, and independent variable for the second subquestion was years of experience. Each subquestion was designed to compare the mean average adapted TRIS results for three separate groups. Subquestion 1 compared the adapted TRIS results of humanities teachers, math and science teachers, and elective teachers. Subquestion 2 compared the adapted TRIS results of teachers with 1–10 years of experience, 11–20 years of experience, and more than 21 years of experience. Because three separate means were compared to one independent variable for each subquestion, an ANOVA was used to compare scores (Ravid, 2011).

Scores were compared for each individual adapted TRIS question and for each categorical score (relationship, approach, and impact). The mean average results for the individual questions were considered nonparametric due to sample size. Therefore, the Kruskal-Wallis ANOVA test was used for the individual question comparisons. When individual question results were combined to create categorical scores, a standard one-way ANOVA was used to compare the mean averages for each independent variable.

Qualitative Assessment

A phenomenological methodology was used to collect qualitative data for this research study. A phenomenological methodology focuses on exploring the perceptions of individuals who have shared an experience in order to develop a comprehensive description of the experience (Moustakas, 1994). With this approach, the researcher was required to bracket personal beliefs and assumptions during the interview process.

In order to gain deeper understanding of the phenomenon of instructional coaching, three teachers were strategically selected and interviewed multiple times to explore how classroom teachers experienced instructional coaching. Each teacher was interviewed multiple times following the quantitative analysis of the adapted TRIS surveys. The qualitative interview questions, as illustrated in Appendix D, were finalized after reviewing the findings from the quantitative data assessments. A standard interview protocol was followed, focusing the researcher on narrowing the central questions and subquestions within the study (Creswell, 2007). The interviews allowed the researcher to gather teachers' perceptions about instructional coaching while exploring what they believed affects the implementation of coaching. Teachers were interviewed multiple times to increase the likelihood of capturing the context of instructional coaching through the lens of teachers. The process provided a forum for teachers to reflect upon personal experiences and share what they believed about the instructional coaching process.

The interviews were recorded and transcribed, and feedback was organized using the open coding process. Open coding involved taking interview transcriptions and segmenting the salient comments into categories, allowing major themes to emerge (Bloomberg & Volpe, 2012). The interview process and open coding analysis allowed the researcher to learn more about what teachers experienced through coaching and how they felt throughout the coaching process. These common themes were triangulated with the quantitative survey results and are reported in Chapter 4. Through the triangulation of results, the researcher explored the similarities and differences between the quantitative and qualitative results.

Quantitative Assessment

The adapted TRIS survey was used to collect all quantitative data. The adapted TRIS, as previously stated, measures three specific categories of instructional coaching: relationships, characteristics, and the impact of instructional coaching on teacher practice. Classroom teacher-adapted TRIS scores were collected through SurveyMonkey. Data analysis began by calculating the mean average results for each individual adapted TRIS question. A mean average score for each category was then calculated by combining and averaging all applicable individual question results. These results served as the baseline to compare adapted TRIS score results by department and years of experience.

After the mean average scores were determined for the entire faculty, the adapted TRIS data were then sorted and recalculated by teacher assignment in order to compare departmental scores to one another. To compare scores by department and create an adequate sample size for statistical analysis, the teachers were organized into three departmental groups. The groups included humanities, math and science, and electives. The humanities group comprised only English and social studies teachers, the science and mathematics group included only science and mathematics teachers, and the elective group was made up of all world language, music, art, health and physical education, career, and technical education teachers. Special education teachers selected one of the three departmental groups that reflected the content area in which they provided the most instruction. Total mean average scores and question-by-question results were compared between departmental assignments for each of the three adapted TRIS categories. SPSS was used to complete the Kruskal-Wallis test, and a standard one-way ANOVA and a p value of .05 were set to measure whether or not the differences were significant.

To compare scores between experience groups, the adapted TRIS results were sorted and calculated into three groups. Organizing teachers into three groups provided appropriate sample sizes for statistical analysis. Group 1 included teachers with 1–10 years of experience, Group 2 comprised teachers with 11–20 years of experience, and Group 3 represented teachers with more than 21 years of experience. Mean average scores by question and category were calculated and compared to one another. The Kruskal-Wallis test was used to compare each group's individual question results, and a one-way ANOVA compared total categorical scores (relationship, approach, and impact) by experience group. SPSS was used to complete the analysis, and a *p* value was set at .05 to measure if differences were statistically significant.

Stages of Data Collection

Approval to conduct the instructional coaching study was granted by the dissertation committee in October 2014. The Institutional Review Board (IRB) approved the study in January of 2015. The qualitative pilot study, which included collegial question reviews and interviews with two former teachers, was conducted in January 2015 following IRB approval. The two teachers who had previously experienced coaching at the research site were interviewed to assess applicability of the interview questions. Written permission was obtained from the participants prior to completing the pilot study.

The researcher obtained written permission from the school district in August 2014. Quantitative data from the adapted TRIS survey were collected in January 2015, and qualitative interviews were conducted throughout January and February 2015. Results were quantified, explored, triangulated, and statistically measured throughout

February and March 2015. Chapters 4 and 5 were written throughout February, March, and April 2015, and data findings will be presented at a final defense hearing set by the dissertation committee in May 2015. The stages of data collection are outlined in Table 3.4.

Table 3.4

Data Collection Timeline

	Aug 2014	Oct 2014	Jan 2015	Feb 2015	March 2015	April–May 2015
Obtain permission from district	X					
Propose research study to committee		X				
Obtain IRB approval			X			
Conduct pilot			X			
Quantitative data collection			X			
Qualitative data collection			X	X		
Data analysis			X	X	X	
Writing of dissertation				X	X	X
Presentation of findings						X

Ethical Considerations

This research study was planned and carried out to meet all ethical guidelines. The Collaborative Institutional Training Initiative (CITI) course was completed in September 2013, and the required certification remains valid through September 2016. The CITI certification may be found in Appendix E. In planning and conducting this research, the researcher fulfilled all obligations set forth by the American Psychological Association (APA) and Drexel University's IRB.

IRB approval was obtained because the study involved interactions with human individuals. Written permission from the school district was obtained in August 2014. Written permission was acquired from the 2 teacher volunteers who participated in the pilot study along with the 3 teachers who were interviewed following the survey data collection. Participants' names and school information were not shared throughout the report in order to protect confidentiality. Because the researcher had previously worked with and had supervised some of the participants, SurveyMonkey was utilized to protect the anonymity of subjects. A password-protected SurveyMonkey account was purchased by the researcher to ensure the data remained confidential. Although the study was not designed to cause physical or emotional harm, the exploration of perceptions had the potential to cause anxiety among participants. Therefore, participation in the study remained voluntary, and participants were able to withdraw at any time. The methodologies used in this study met the criteria for systematic investigation, and the study was designed to contribute to knowledge in the field of instructional coaching and teacher development.

Chapter 4: Findings, Results, and Interpretations

The mixed-methods sequential explanatory design model had two stages: quantitative followed by qualitative (Creswell, 2007). According to this design, a researcher first gathers and investigates the quantitative data. Then, following the quantitative analysis, qualitative data are collected and explored to provide meaning and to elaborate on the quantitative results. The qualitative exploration is driven by the quantitative results, and the two phases are connected through the analysis of the results. The basis for this method is that the quantitative data provide a general understanding of the research problem (Ivankova et al., 2006). Therefore, for this study, the quantitative data analysis provided a foundation for the phenomenological qualitative exploration such that the researcher attempted to uncover the phenomenon of instructional coaching through the lens of teachers who shared similar coaching experiences. The qualitative interviews provided a context for coaching that could not be captured through a quantitative survey.

This explanatory mixed-method study was designed to explore how classroom teachers perceive and experience instructional coaching at an urban high school in Pennsylvania. The study also measured the relationship of teachers' experience and content assignment to their receptiveness to the instructional coaching process. This chapter provides the findings, results, and interpretations of the field research conducted throughout the study.

Two methodologies were used to explore how classroom teachers perceive and experience instructional coaching at the research site. First, the adapted TRIS was offered to the 107 classroom teachers. The adapted TRIS survey, as described in Chapter 3, was

designed to measure how classroom teachers perceived instructional coaching. The survey explored the relationships between the classroom teachers and coaches, the approaches chosen by the instructional coaches, and the overall impact of the instructional coaching process through the lens of a classroom teacher. The survey results provided a general overview of how the classroom teachers perceived instructional coaching and allowed the researcher to quantitatively measure the relationship of teachers' experience and content assignment to their receptiveness to the instructional coaching process. In addition, the survey results were used to finalize the interview questions and to set the stage for the researcher to conduct a series of interviews with a small group of classroom teachers using a phenomenological approach in order to explore how teachers experienced coaching.

This study was designed to better understand the experiences of teachers receiving instructional coaching with the goal of assisting other practitioners who are attempting to implement an instructional coaching model. As reported in Chapters 1–3, most high schools fail to implement instructional coaching effectively. By conducting classroom teacher interviews and then analyzing their experiences using an open coding process, the researcher found that common patterns began to emerge. These common codes created unifying themes about what classroom teachers believed to be the most important skill sets of an instructional coach, the challenges with implementing instructional coaching at the high school level, the most effective coaching approaches used at the research site, and the perceived outcomes of instructional coaching.

These data collection processes allowed the researcher to further explore the central research question regarding how classroom teachers perceive and experience

instructional coaching at an urban high school in Pennsylvania and to measure the two quantitative subquestions comparing the relationship of teachers' experience and content assignment to their receptivity to instructional coaching. The following sections provide a detailed analysis of the research findings along with a comprehensive interpretation of the results. The quantitative research provided the context for the qualitative interview process and was used to develop the interview questions. Therefore, the quantitative analysis and subquestion findings precede the qualitative exploration and central research findings.

Findings

Quantitative Analysis

There were two quantitative subquestions measured in this study. First, what is the relationship between a classroom teacher's content area assignment and receptivity to instructional coaching? Second, what is the relationship between a teacher's years of experience and receptivity to instructional coaching? The adapted TRIS survey was used to collect and compare quantitative data on how classroom teachers perceive instructional coaching. The TRIS survey was originally designed to explore relationships, coaching approaches, and the impact of the coaching process through the lens of a mathematics classroom teacher (Yopp et al., 2010). Authorization was obtained to make adaptions to the TRIS in order to include all content areas. Authorization documentation may be found in Appendix F.

Eighty out of the 107 high school classroom teachers opened the adapted TRIS survey URL link that was sent to them via an e-mail. Seventy-seven teachers completed the entire survey, and 3 of the 80 respondents were removed from the data. Two of the

respondents were removed because after opening the survey URL, they did not complete any of the survey questions. A third participant was removed from the data due to the respondent choosing the same response (1) for the first two pages of questions and then logging out of the survey. Table 4.1 provides a mean average statistical summary for each question asked on the adaptive TRIS.

An ANOVA is a statistical technique used to compare parametric means of multiple samples. The Kruskal-Wallis ANOVA test is a statistical technique used to compare nonparametric means of multiple samples. The Kruskal-Wallis test is the nonparametric analog to the one-way ANOVA, which means that it does not require the same distributional assumptions as the one-way ANOVA. The Kruskal-Wallis test is interpreted similarly to the one-way ANOVA, with a significant result indicating that at least two groups are different from each other. For this study, the Kruskal-Wallis test was used to compare the scores for each adapted TRIS question. When statistically significant differences were found using the Kruskal-Wallis test, Mann-Whitney U tests were then used to identify which specific group differences were statistically significant. A Bonferroni adjustment was also utilized to account for the multiple comparisons during the post hoc tests.

A standard one-way ANOVA was used when comparing the independent variables (content area and years of experience) to the total categorical scores (relationship, approach, and impact). Post hoc tests used Tukey's method to account for multiple pairwise comparisons. The categorical scores were created by taking the mean scores across all items within each of the three categories (relationship, approach, and impact). Table 4.2 displays the summary statistics and reliabilities (Cronbach's alpha) for

Table 4.1

Adapted TRIS Mean Average Scores

	N	Min.	Max.	Mean	*SD*
I. Relationships					
I felt comfortable communicating with my instructional coach.	77	2	5	4.286	0.792
I felt my coach respects my opinions, understands my situation, and the challenges I face.	77	2	5	4.039	1.006
I felt comfortable with my coach's reflecting on my teaching practice.	77	1	5	4.104	0.940
I valued my coach's input.	77	1	5	4.039	0.979
II. Coaching Approach					
My coach and I discussed significant and worthwhile content.	75	1	5	3.760	1.051
My coach and I discussed the content that I teach.	75	1	5	3.867	1.166
My coach and I discussed ways to increase academic rigor.	75	1	5	3.627	1.171
My coach and I discussed content beyond the grade level I teach.	75	1	5	2.933	1.288
My coach and I discussed ways to incorporate literacy-based learning into my lessons.	75	1	5	3.933	1.119
My coach and I discussed ways to increase more concept development into my lessons.	75	1	5	3.267	1.245
My coach and I discussed ways to increase more problem solving into my lesson.	75	1	5	3.080	1.343
My coach and I discussed ways to increase student participation in lessons.	75	1	5	3.827	1.132
My coach and I discussed ways to make meaning.	71	1	5	3.394	1.248
My coach and I discussed ways to encourage students to pursue intellectual rigor and/or challenging of ideas.	75	1	5	3.187	1.302
My coach and I discussed ways to create an environment where students collaborate and listen to one another's ideas.	75	1	5	3.547	1.222
My coach and I discussed formative assessments.	75	1	5	3.933	1.155

Table 4.1 (continued)

	N	Min.	Max.	Mean	*SD*
My coach and I discussed ways to improve the use of questioning strategies	75	1	5	3.600	1.151
My coach and I set goals and objectives aimed at implementing ideas and addressing issues we discussed.	75	1	5	3.147	1.270
My coach and I were reflective about my students' learning.	75	1	5	3.613	1.207
My coach and I were reflective about my teaching practices.	75	1	5	3.680	1.210
III: Impact on Instruction					
The content I teach.	71	1	5	3.282	1.256
Discussions with my coach about inquiry or discovery-based learning.	65	1	5	2.985	1.256
Discussions with my coach about ways to infuse more conceptual understanding into my lessons.	61	1	5	3.098	1.261
Discussions with my coach about ways to infuse more problem solving into my lessons.	62	1	5	3.032	1.342
Discussions with my coach about formative assessments.	69	1	5	3.638	1.272
Discussions with my coach about ways to improve questioning strategies.	69	1	5	3.362	1.212
Discussions with my coach about how to increase engagement in thought provoking activities.	70	1	5	3.600	1.256
Discussions with my coach about how to increase student participation.	69	1	5	3.696	1.192
Discussions with my coach about ways to encourage students to pursue intellectual rigor and/or challenging ideas.	65	1	5	3.215	1.293
The goals and objectives my coach and I set aimed at implementing ideas and addressing issues we discussed.	62	1	5	3.387	1.107
Discussions with my coach about student learning.	72	1	5	3.653	1.200
Discussions with my coach about my teaching practices.	70	1	5	3.786	1.020

Table 4.2

Categorical Mean Average and Reliability Scores

	N	Min.	Max.	Mean	*SD*	Alpha
Relationships	77	2	5	4.1169	0.8327	0.915
Coaching approach	75	1	5	3.5259	0.9433	0.959
Impact on instruction	74	1	5	3.3149	1.0514	0.964

each of the categorical scores. The reliability scores for each category were excellent (α = .915 for relationships, α = .959 for coaching approach, and α = .964 for impact on instruction).

Subquestion 1: How Content Assignment Affects Receptivity

The first subquestion of this research study measured how a teacher's content assignment affected his or her receptivity to instructional coaching. Figure 4.1 displays the distribution of observations on the independent variable of content assignment. In all, 31.2% (n = 24) of respondents taught in the humanities, 40.3% (n = 31) taught math and science, and 28.6% (n = 22) taught electives. As stated in the limitations section of Chapter 1 and the methodologies section of Chapter 3, to increase the sample size, the teachers at the research site were grouped into three departmental categories. Combining content areas provided appropriate samples to quantitatively compare groups, and the regroupings eliminated the possibility of participants being identified by answering the demographic questions.

Figure 4.1 displays the Kruskal-Wallis summary statistics for each of the adapted TRIS individual coaching questions by teaching assignment. Table 4.4 displays the one-way ANOVA total categorical (relationship, approach, and impact) scores by teaching assignment. The final column in both Tables 4.3 and 4.4 displays the p value from each

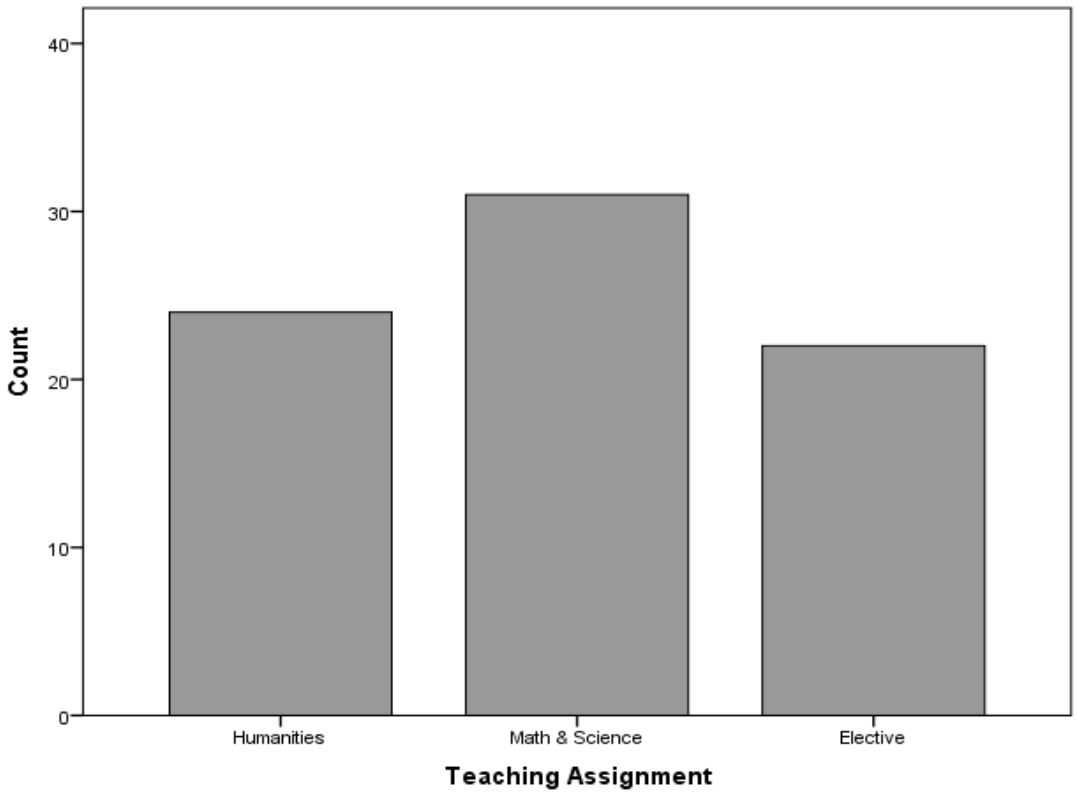

Figure 4.1. Teacher distribution by content assignment.

Table 4.3

Adaptive TRIS Kruskal-Wallis Tests of Items by Content Area

	Humanities		Math & Science		Electives		Kruskall-Wallis
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
I felt comfortable communicating with my instructional coach.	3.917	0.881	4.452	0.675	4.455	0.739	0.033
I felt my coach respects my opinions, understands my situation, and the challenges I face.	3.667	1.007	4.065	1.031	4.409	0.854	0.037
I felt comfortable with my coach's reflecting on my teaching practice.	3.958	0.806	4.226	0.884	4.091	1.151	0.389

Table 4.3 (continued)

	Humanities		Math & Science		Electives		Kruskall-Wallis
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
I valued my coach's input.	3.750	0.944	4.194	0.833	4.136	1.167	0.123
My coach and I discussed significant and worthwhile content.	3.458	0.932	3.867	1.167	3.952	0.973	0.138
My coach and I discussed the content that I teach.	3.500	0.978	4.067	1.258	4.000	1.183	0.041
My coach and I discussed ways to increase academic rigor.	3.458	1.141	3.833	1.147	3.524	1.250	0.425
My coach and I discussed content beyond the grade level I teach.	2.917	1.176	3.067	1.507	2.762	1.091	0.780
My coach and I discussed ways to incorporate literacy-based learning into my lessons.	4.000	0.978	3.733	1.258	4.143	1.062	0.485
My coach and I discussed ways to increase more concept development into my lessons.	2.958	1.268	3.500	1.358	3.286	1.007	0.250
My coach and I discussed ways to increase more problem solving into my lessons.	2.500	1.285	3.600	1.276	3.000	1.265	0.010
My coach and I discussed ways to increase student participation in lessons.	3.750	0.944	4.000	1.203	3.667	1.238	0.389
My coach and I discussed ways to make meaning.	3.000	1.272	3.733	1.172	3.316	1.250	0.137
My coach and I discussed ways to encourage students to pursue intellectual rigor and/or challenging of ideas.	3.083	1.176	3.200	1.495	3.286	1.189	0.838

Table 4.3 (continued)

	Humanities		Math & Science		Electives		Kruskall-Wallis
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
My coach and I discussed ways to create an environment where students collaborate and listen to one another's ideas.	3.625	1.056	3.633	1.189	3.333	1.461	0.840
My coach and I discussed formative assessments.	3.875	0.947	4.167	1.206	3.667	1.278	0.122
My coach and I discussed ways to improve the use of questioning strategies.	3.333	1.308	3.733	1.015	3.714	1.146	0.478
My coach and I set goals and objectives aimed at implementing ideas and addressing issues we discussed.	2.958	1.301	3.300	1.264	3.143	1.276	0.588
My coach and I were reflective about my students' learning.	3.333	1.204	3.767	1.251	3.714	1.146	0.345
My coach and I were reflective about my teaching practices.	3.500	0.933	3.767	1.431	3.762	1.179	0.328
The content I teach.	3.043	1.186	3.778	1.281	2.905	1.136	0.023
Discussions with my coach about inquiry- or discovery-based learning.	2.429	1.207	3.625	1.096	2.800	1.196	0.004
Discussions with my coach about ways to infuse more conceptual understanding into my lessons.	2.688	1.195	3.440	1.261	3.000	1.257	0.160
Discussions with my coach about ways to infuse more problem solving into my lessons.	2.611	1.290	3.423	1.362	2.889	1.278	0.129
Discussions with my coach about formative assessments.	3.522	1.275	3.926	1.328	3.368	1.165	0.190

Table 4.3 (continued)

	Humanities		Math & Science		Electives		Kruskall-Wallis
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
Discussions with my coach about ways to improve questioning strategies.	3.043	1.397	3.429	1.168	3.667	0.970	0.346
Discussions with my coach about how to increase engagement in thought-provoking activities.	3.217	1.278	3.714	1.150	3.895	1.329	0.140
Discussions with my coach about how to increase student participation.	3.250	1.260	3.926	1.174	3.944	0.998	0.061
Discussions with my coach about ways to encourage students to pursue intellectual rigor and/or challenging ideas.	2.762	1.179	3.640	1.350	3.158	1.214	0.067
The goals and objectives my coach and I set aimed at implementing ideas and addressing issues we discussed.	2.900	1.021	3.680	1.180	3.529	0.943	0.050
Discussions with my coach about student learning.	3.292	1.160	3.828	1.197	3.842	1.214	0.152
Discussions with my coach about my teaching practices.	3.591	0.796	4.000	1.054	3.700	1.174	0.214

Table 4.4

Adaptive TRIS One-Way ANOVA Categorical Comparisons by Content Area

	Humanities		Math & Science		Electives		ANOVA
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
Relationships	3.823	0.771	4.234	0.774	4.273	0.926	0.112
Coaching approach	3.331	0.819	3.685	1.026	3.520	0.954	0.396
Impact on instruction	3.024	0.988	3.628	1.029	3.215	1.083	0.099

analysis. Six of the 32 Kruskal-Wallis tests showed statistically significant differences in how teacher content area affects perceptions of instructional coaching, but no statistically significant differences emerged when comparing the total categorical scores of adapted TRIS with a one-way ANOVA. The Kruskal-Wallis tests revealed two questions within each of the three adapted TRIS survey categories (relationship, approach, and impact) had statistically significant differences and are listed below.

Relationship Category

1. I felt comfortable communicating with my instructional coach. (p = .033)
2. I felt my coach respects my opinions, understands my situation, and the challenges I face. (p = .037)

Approach Category

3. My coach and I discussed the content that I teach. (p = .041)
4. My coach and I discussed ways to increase more problem solving into my lesson. (p = .010)

Impact Category

5. The content I teach. (p = .023)
6. Discussions with my coach about inquiry or discovery based learning. (p = .004)

While the Kruskal-Wallis tests found significant differences in a total of six questions, the adjusted post hoc tests that were used to find the actual differences reduced the total number of statistically significant findings to five. Comprehensive descriptions of the specific findings follow in Tables 4.3 and 4.4.

The first significant difference related to how content area affects receptivity to instructional coaching emerged within the relationship category when teachers were ask about their comfort level in communicating with the instructional coach (p = .033). Although differences in perceptions emerged between humanities teachers' scores (M = 3.917) and math and science teachers' scores (M = 4.452) and between humanities teachers' scores (M = 3.917) and elective teachers' scores (M = 4.455), the adjusted post hoc tests showed no significant group differences. The smallest p values were .077 for the humanities–electives comparison and .061 for the humanities–math and science comparison. Thus, there was only weak support for the hypothesis that teaching assignment affects communication with an instructional coach.

The second significant difference emerged in the relationship category when measuring how coaches were perceived regarding respecting opinions and understanding situations and the challenges that classroom teachers face (p = .037). In this case, the post hoc test revealed that the elective teachers' perceptions (M = 4.409) of the instructional coaches were significantly higher than the humanities teachers' (M = 3.667; p = .032). The elective teachers felt that the instructional coaches had a greater level of understanding of the challenges they faced in comparison to the humanities teachers.

The third significant result emerged within the coaching approach category in the question asking if the coach and respondent discussed teaching content ($p = .041$). Post hoc tests with a Bonferroni adjustment revealed that the significant differences were due to differences between humanities ($M = 3.500$) and math and science teachers ($M = 4.067$). In this question, math and science teachers had significantly higher scores ($p = .048$) in discussing content with a coach in comparison to humanities teachers.

The fourth significant result was within the coaching approach category for the item asking if the coach and respondent discussed ways to increase problem solving in lesson plans ($p = .010$). Post hoc tests revealed that the significant findings for the Kruskal-Wallis test were due to differences between humanities teachers ($M = 2.611$) and math/science teachers ($M = 3.423$; $p = .007$). The math and science teachers used significantly more time discussing problem-solving approaches with coaches during lesson planning in comparison to the humanities teachers.

The fifth significant result occurred in the impact category on the item concerning how instructional coaching affected the content being taught by the classroom teacher ($p = .023$). Post hoc tests revealed that the significant result was based on the differences between teachers of math and science ($M = 3.778$) and the lower scores of teachers of electives ($M = 2.905$; $p = .039$). The scores for math and science teachers were significantly higher than those of elective teachers when comparing how instructional coaching impacted content decisions.

The sixth and final significant result occurred within the impact category on how instructional coaching affected classroom teachers' use of inquiry or discovery-based learning ($p = .004$). The differences driving the significant results came from the

comparison of humanities teachers ($M = 2.429$) and math and science teachers ($M = 3.625$; $p = .004$). Math and science teachers' scores were significantly higher than humanities teachers' scores when comparing how instructional coaching impacted inquiry and discovery learning.

Figures 4.2–4.4 display the total categorical differences by content area using box plots. The box in each plot covers the interquartile range of the data (from the 25th percentile to the 75th percentile). The line in the box is the median (50th percentile). The lines extending from the boxes cover the rest of the data, or up to 1.5 times the interquartile range. Any dots beyond the lines represent outliers. The box plots are intended to compare distributions, including central tendencies, between the groups.

Subquestion 2: How Teacher Experience Affects Receptivity to Coaching

The second subquestion of this research study explored how a teacher's years of experience affected receptivity to instructional coaching. Figure 4.5 displays the distribution of observations for the independent variable of experience. In terms of teaching experience, 39.5% ($N = 30$) had taught between 1 and 10 years, 35.5% ($N = 27$) had taught between 11 and 20 years, and 25% ($N = 19$) had taught more than 21 years.

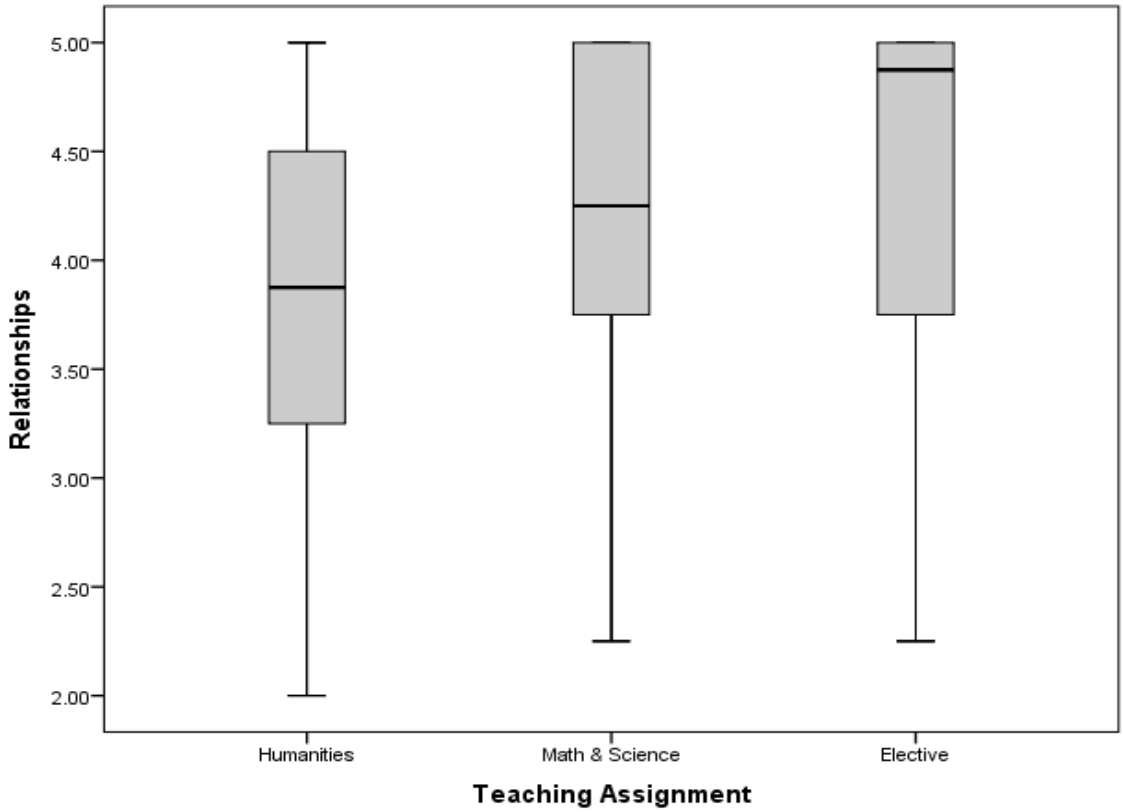

Figure 4.2. Box plot comparing relationship scores by content area.

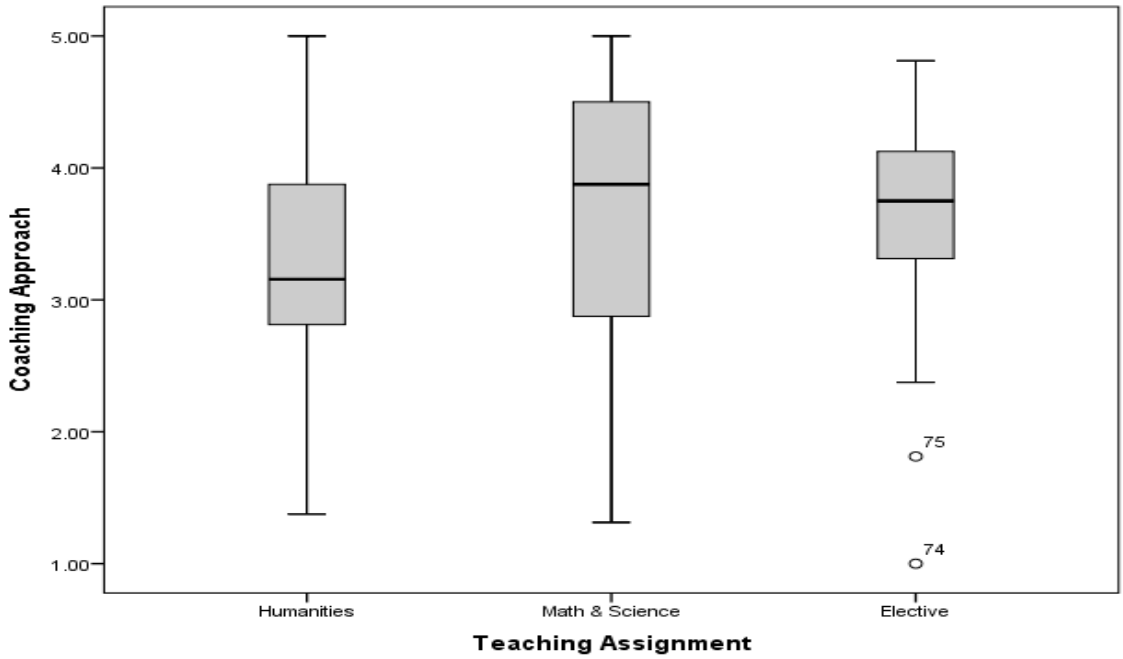

Figure 4.3. Box plot comparing coaching approach scores by content area.

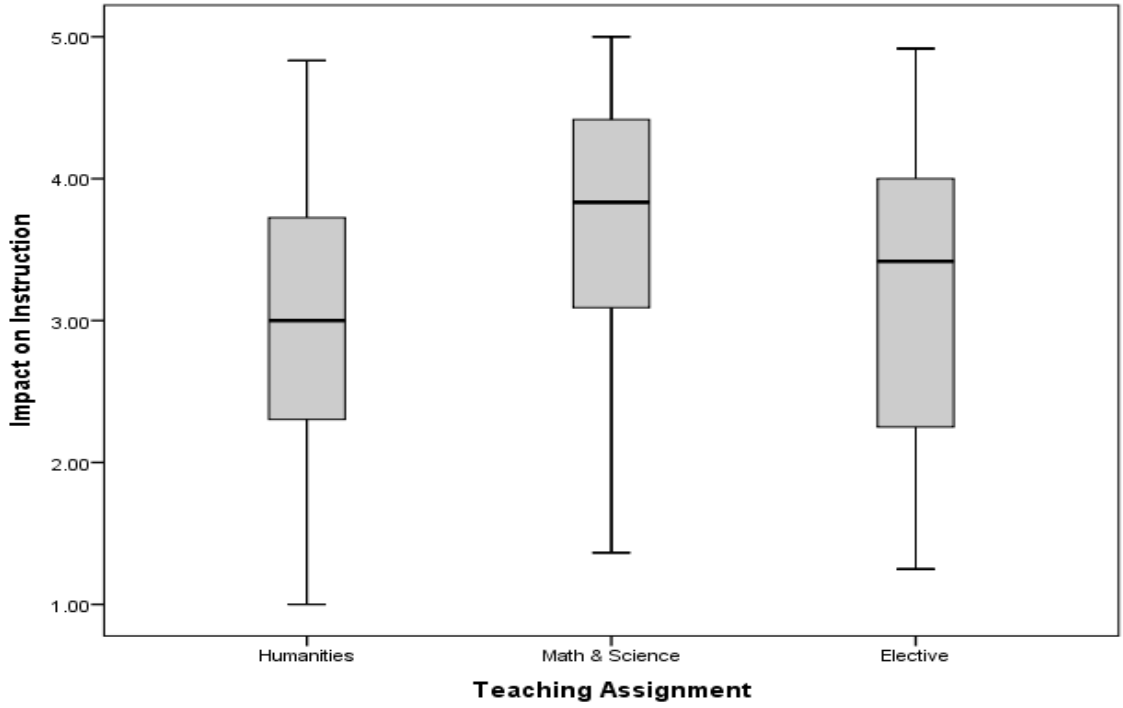

Figure 4.4. Box plot comparing impact scores by content area.

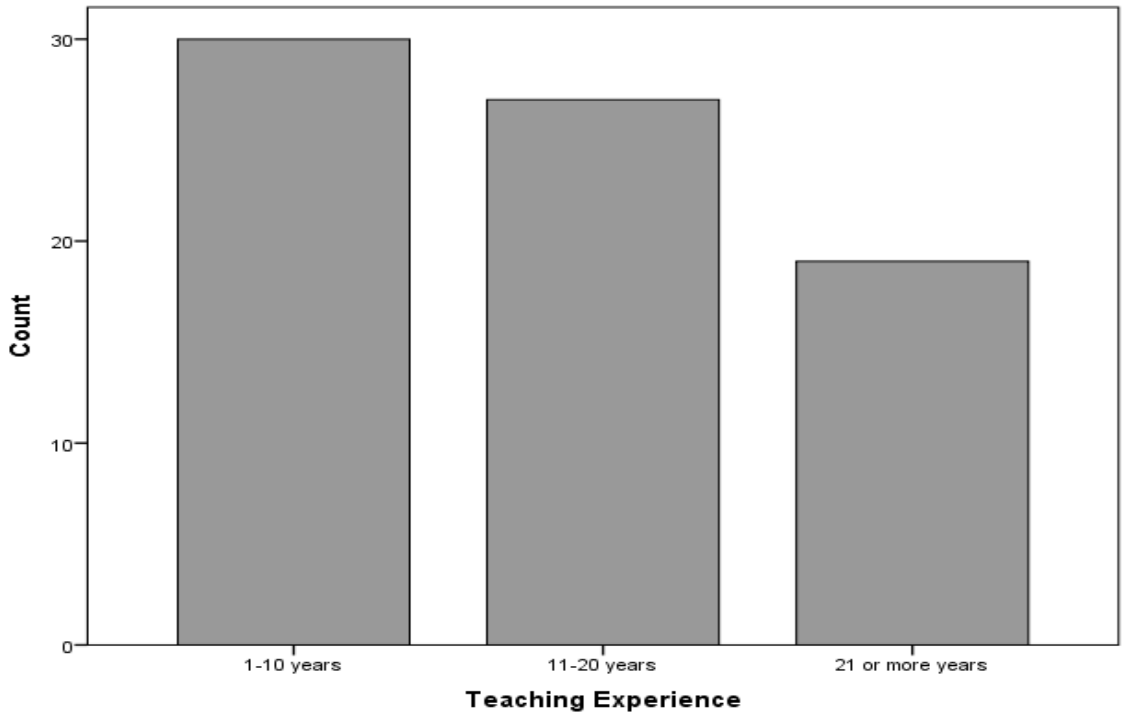

Figure 4.5. Distribution by experience.

Table 4.5 displays the Kruskal-Wallis summary statistics for each of the adapted TRIS individual coaching questions by years of experience. Table 4.6 displays the one-way ANOVA total categorical (relationship, approach, and impact) scores by teaching assignment. The final column in both Tables 4.5 and 4.6 displays the *p* value from each analysis. Although notable differences were found with how experience affected perceptions of coaching, none of the differences proved to be statistically significant.

The most notable difference that was found in the individual question analysis by experience was how classroom teachers felt instructional coaches respected opinions and understood situations and the challenges that classroom teachers faced. Although all experience group mean average scores were relatively high on this question (1–10 years experience = 4.367, 11–20 years = 3.926, and more than 21 years = 3.737), there were

Table 4.5

Adaptive TRIS Kruskal-Wallis Tests of Items by Years of Experience

	1–10 years		11–20 years		21 or more years		Kruskall-Wallis
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
I felt comfortable communicating with my instructional coach.	4.467	0.730	4.296	0.724	4.000	0.943	0.178
I felt my coach respects my opinions, understands my situation, and the challenges I face.	4.367	0.890	3.926	1.035	3.737	1.046	0.067
I felt comfortable with my coach's reflecting on my teaching practice.	4.300	0.877	4.037	0.980	3.895	0.994	0.274
I valued my coach's input.	4.233	0.817	4.000	1.038	3.789	1.134	0.421
My coach and I discussed significant and worthwhile content.	3.931	0.923	3.630	1.245	3.667	0.970	0.557
My coach and I discussed the content that I teach.	4.000	1.000	3.741	1.228	3.778	1.353	0.806
My coach and I discussed ways to increase academic rigor.	3.586	1.150	3.556	1.251	3.778	1.166	0.815
My coach and I discussed content beyond the grade level I teach.	3.103	1.372	2.852	1.292	2.778	1.215	0.692
My coach and I discussed ways to incorporate literacy-based learning into my lessons.	4.069	1.193	3.667	1.109	4.056	0.998	0.221
My coach and I discussed ways to increase more concept development into my lessons.	3.483	1.184	2.889	1.281	3.389	1.195	0.177
My coach and I discussed ways to increase more problem solving into my lesson.	3.172	1.284	2.741	1.375	3.333	1.328	0.252
My coach and I discussed ways to increase student participation in lessons.	3.793	1.114	3.704	1.171	4.000	1.138	0.641

Table 4.5 (continued)

	1–10 years		11–20 years		21 or more years		Kruskall-Wallis
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
My coach and I discussed ways to make meaning.	3.517	1.299	3.400	1.041	3.063	1.436	0.537
My coach and I discussed ways to encourage students to pursue intellectual rigor and/or challenging of ideas.	3.379	1.347	2.741	1.289	3.500	1.150	0.100
My coach and I discussed ways to create an environment where students collaborate and listen to one another's ideas.	3.517	1.271	3.370	1.245	3.889	1.132	0.434
My coach and I discussed formative assessments.	4.103	1.047	3.778	1.340	3.833	1.043	0.539
My coach and I discussed ways to improve the use of questioning strategies.	3.724	0.960	3.481	1.341	3.611	1.195	0.856
My coach and I set goals and objectives aimed at implementing ideas and addressing issues we discussed.	3.448	1.055	2.889	1.450	3.000	1.283	0.233
My coach and I were reflective about my students' learning.	3.897	1.081	3.407	1.217	3.500	1.383	0.314
My coach and I were reflective about my teaching practices.	4.000	1.102	3.593	1.152	3.278	1.406	0.146
The content I teach.	3.643	1.339	2.962	1.248	3.125	1.025	0.095
Discussions with my coach about inquiry- or discovery-based learning.	3.115	1.275	2.667	1.155	3.176	1.380	0.367
Discussions with my coach about ways to infuse more conceptual understanding into my lessons.	3.111	1.368	3.105	1.243	3.071	1.207	0.985

Table 4.5 (continued)

	1–10 years		11–20 years		21 or more years		Kruskall-Wallis
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
Discussions with my coach about ways to infuse more problem solving into my lessons.	3.111	1.368	3.000	1.374	2.933	1.387	0.936
Discussions with my coach about formative assessments.	3.750	1.351	3.522	1.238	3.588	1.278	0.718
Discussions with my coach about ways to improve questioning strategies.	3.654	1.056	3.042	1.233	3.444	1.338	0.206
Discussions with my coach about how to increase engagement in thought provoking activities.	3.750	1.175	3.375	1.345	3.647	1.320	0.588
Discussions with my coach about how to increase student participation.	3.786	1.166	3.565	1.121	3.706	1.404	0.650
Discussions with my coach about ways to encourage students to pursue intellectual rigor and/or challenging ideas.	3.148	1.292	3.143	1.153	3.375	1.544	0.773
The goals and objectives my coach and I set aimed at implementing ideas and addressing issues we discussed.	3.577	1.065	3.333	1.197	3.214	1.051	0.622
Discussions with my coach about student learning.	3.828	1.136	3.500	1.285	3.556	1.247	0.604
Discussions with my coach about my teaching practices.	3.862	1.125	3.680	0.852	3.733	1.100	0.598

Table 4.6

Adaptive TRIS One-Way ANOVA Categorical Comparisons by Years of Experience

	1–10 years		11–20 years		21 or more years		ANOVA
	Mean	*SD*	Mean	*SD*	Mean	*SD*	*p* value
Relationships	4.342	0.753	4.065	0.816	3.855	0.940	0.127
Coaching approach	3.670	0.901	3.341	1.018	3.533	0.916	0.434
Impact on instruction	3.476	1.033	3.119	1.073	3.327	1.091	0.464

notable differences between the scores of teachers with 1–10 years of experience and teachers with more than 21 years of experience. However, these differences between 1–10 years and more than 21 years scored a *p* value of .067; therefore the differences were not considered statistically significant.

Differences also emerged when comparing how total categorical scores (relationships, approach, and impact) were affected by experience; however none of the differences were found to be statistically significant. Figures 4.6, 4.7, and 4.8 display the total categorical differences by content areas using box plots. The box in the plots covers the interquartile range of the data (from the 25th percentile to the 75th percentile), and the line in the box is the median (50th percentile). The lines extending from the boxes cover the rest of the data or up to 1.5 times the interquartile range. Any dots beyond the lines represent outliers. The box plots are intended to compare distributions, including central tendencies, between the groups.

Qualitative Analysis

Three classroom teachers who have experienced instructional coaching at the research site were interviewed multiple times using a phenomenological approach to explore the central research question of how classroom teachers perceive instructional

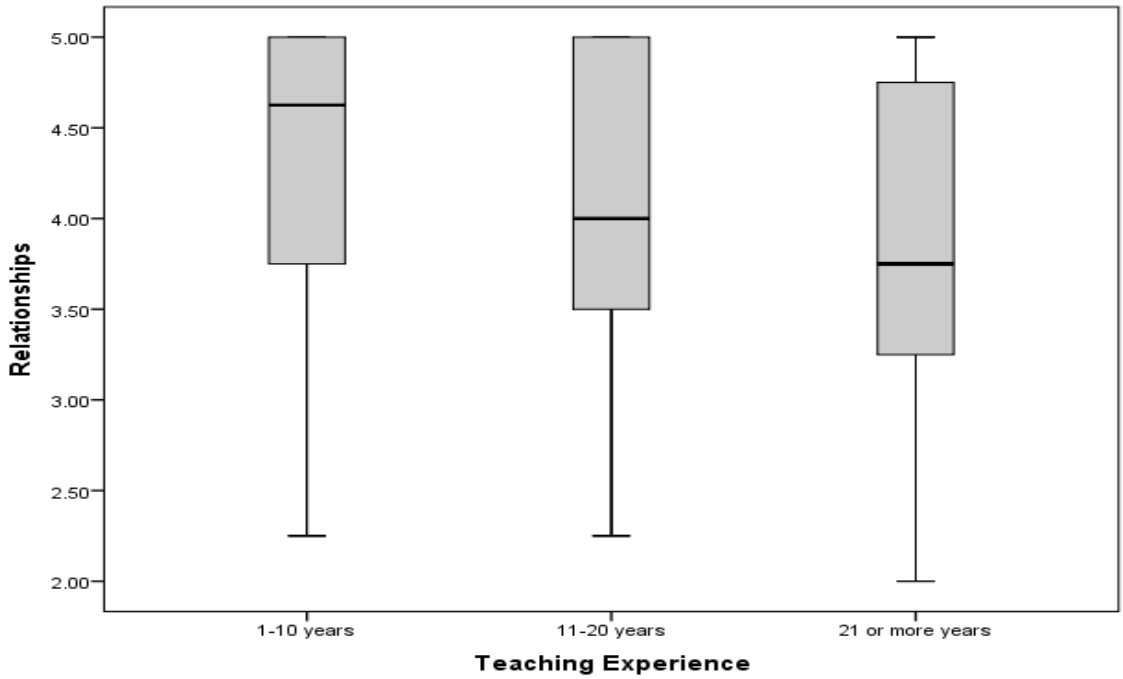

Figure 4.6. Box plot comparing relationship scores by teaching experience.

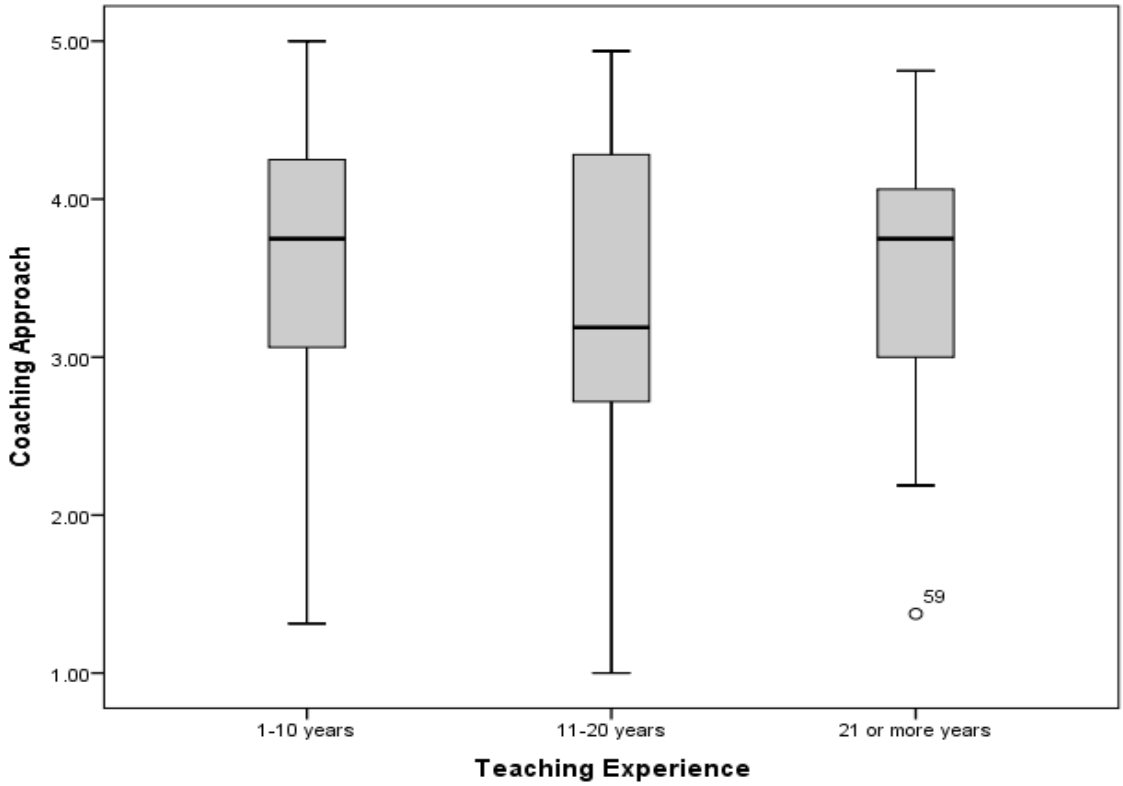

Figure 4.7. Box plot comparing approach scores by teaching experience.

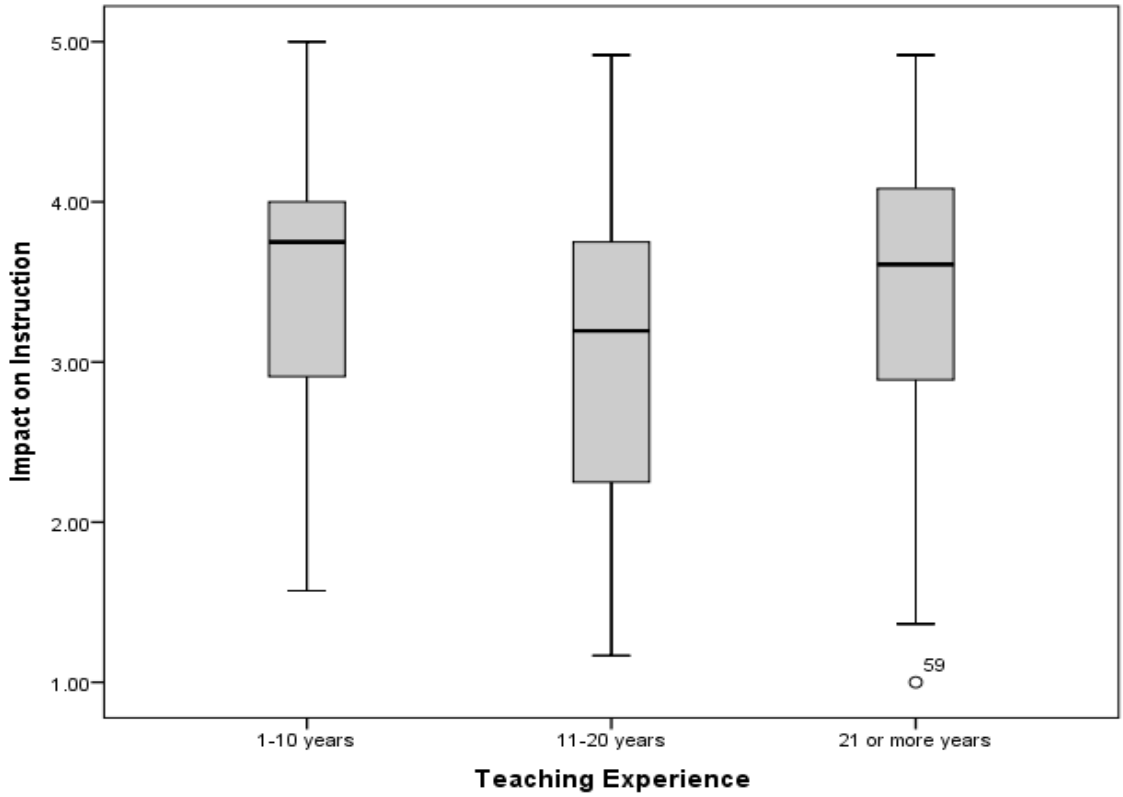

Figure 4.8. Box plot comparing impact scores by teaching experience.

coaching. Although the sample was small, through strategic selection of candidates, a representative from each of the categories of content and years of experience was explored. The small group of interviewees included male and female subjects. One classroom teacher was African American and the other 2 were Caucasian.

The qualitative interview questions were finalized after reviewing results from the adapted TRIS survey and completing a pilot study. The interview process allowed the researcher to explore the phenomenon of instructional coaching through the experiences of classroom teachers who actively participated in the instructional coaching process. The researcher collected information from each teacher separately on three different occasions

using the standard interview process as approved by IRB and as described in Chapter 3. Teacher interviews were recorded and transcribed.

In order to make meaning of the written transcriptions, a hermeneutic approach was used to organize the interview data followed by an open coding process. Ajjawi and Higgs (2007) suggested that the purpose of a hermeneutical approach is to provide meaning to the participant's story and that prior knowledge about the explored phenomenon from the researcher plays an important role. By organizing data using a part-to-whole hermeneutic approach and then by analyzing teacher responses using an open coding process, the researcher identified common response patterns. These common patterns created unifying codes about what classroom teachers believed to be the most important skill sets of an instructional coach, challenges with implementing instructional coaching, effective coaching approaches, and the perceived outcomes of instructional coaching. Figures 4.9–4.11 provide salient comments from each participant aligned to the common codes that emerged through the data analysis. To protect the confidentiality of participants, pseudonyms were used throughout the report.

Participant 1: Jane

Jane is an English teacher who has been teaching at the research site for 5 years. She is described as an optimist who puts forth a great deal of effort in building relationships with students. Jane is an avid reader and has a love for animals. She is described as someone who wears her heart on her sleeve and who works extremely hard for the benefit of her students. Jane mentors multiple students, is very active on social media with students and families, and routinely attends extracurricular activities to support her students outside of the classroom.

Jane has faced substantial adversities throughout her life, including being the victim of rape. Facing these extraordinary challenges may explain why she goes above the norm to help students who are facing personal complexities. Jane is commonly seen providing snacks or offering extra support to students who are considered higher risk.

Jane is from a small town and admits that she was initially nervous about working at a large urban high school. However, she has "fallen in love" with the challenges and opportunities to make a "real" difference. Family and friends often ask her why she chooses to work in a school with a challenging reputation, but Jane is quick to defend her workplace and the opportunities it presents for all students. Jane suggests that she could not be happier with her decision to work at the research site and with her life in general. Last year, Jane completed her master's degree and married a gentleman who works as a maintenance worker for the school district.

Jane enjoys socializing with her colleagues and has expressed that she finds value in collaborating with others. She suggested that she has a lot to learn about teaching and balancing her role between being a teacher and mentor. Feeling valued appears very important to Jane, and receiving positive reinforcement from colleagues and administration motivates her. Jane is an effective teacher as measured by student achievement results and through observation, and she appears to have continually improved within her profession. However, Jane also appears insecure at times about her skill level and overall effect on students. Although the researcher attempted to bracket assumptions during the interview process, his supposition based on previous working relationships was that Jane is highly receptive to the instructional coaching process.

Table 4.7

Jane's Quotes Related to Codes

Codes	Quotes
Skill sets	A coach needs to be trustworthy and able to connect to me and my classroom challenges . . . They need to be supportive . . . approachable . . . open and willing to learn with the teachers . . . empathetic . . . a mentor to us . . . A coach needs to be an instructional expert with teaching experience . . . They should have strong technology skills . . . be collaborative . . . A coach has to be a good listener and communicator and make teachers feel valued.
Challenges	It was stressful always being under the microscope and taking risks in front of peers. It was sometimes uncomfortable . . . While coaching has helped me, it was scary because it confronted difficult issues I had with engagement . . . The spotlight was on me and what we could do to change me . . . I wasn't comfortable approaching some of the coaches . . . Some coaches felt they were way above me, and I did not want to work with them. Some colleagues do not want help or perceive that asking for help means that they are a failure . . . and the level of openness to coaching varies in my school . . . The experienced teachers appear less receptive . . . Some teachers have irrational fears about the process, are stuck in their ways, and are afraid to take risks and fearful of being exposed . . . Content area may impact implementation . . . Our elective teachers appear most receptive, and the content areas that are not so heavily involved with reading and writing would probably value coaching support more . . . It takes a lot of time to build trust between adults, and there is not enough coaching support available . . . The coaches are stretched too thin . . . Admin has to support teachers taking risks . . . It takes a lot of time to build trust and figure out things . . . Our schedules are so full now and there is less time to work together. A big challenge is establishing a culture where people trust and want to work with one another.

Table 4.7 (continued)

Codes	Quotes
Coaching practices	The coaches help me with how to engage all kids . . . improve instructional practice . . . They helped me rewrite assessments and [learn] how to continually check for understanding as opposed to having one exam at the end . . . They help me use new technology tools to increase engagement . . . rethink reading and writing strategies . . . use more hands-on learning . . . They modeled best practices . . . Coaching provides multiple viewpoints and helps me reflect . . . Teamwork and collaboration ha[ve] helped me to problem solve and better plan . . . personalized support . . . data analysis . . . They help with figuring out the right content, engagement strategies, planning, technology, and everyday processes . . . Coaching has been successful because most can understand my challenges. They have great ideas and most are approachable . . . Visiting one another in classrooms on learning walks is also a huge help.
Outcomes	There has been a big change in attitude throughout our school from when I started until now. Our instructional coaches have helped so many teachers see purpose in changing the way that we teach . . . People are much more collaborative and are learning and problem solving with one another . . . Many attribute our recent achievement successes and changes of behavior and attitude to instructional coaching . . . I love visiting other classrooms and seeing kids meaningfully engaged . . . Students are actively reading and writing in most classrooms . . . I'm blown away by the differences in our school and how we work together in comparison to friends in other districts . . . Working with a coach has pushed me to find ways to make every kid learn, and I have watched a lot of students grow because I am improving.

Participant 2: John

John is a math teacher who has worked at the research site for 17 years. John has a reputation from students and faculty as being no-nonsense with high expectations coupled with care and concern. John has been described by colleagues as a quiet yet intense faculty leader, and he is often seen at the research site hours before and after school. In previous conversations, John has shared the complexities of being one of only

a few faculty members with a diverse background and the need for students to work with more professionals who are African American.

John grew up in larger inner city about 80 miles from the research site. He then moved to a smaller town close to the research site when he was in elementary school where he was one of only a few African American students. John shared examples of how he had been unfairly judged because of the color of his skin. He has been the victim of racial slurs, unjustifiable class placements, and missed opportunities. Although John was described as being an introvert, John felt the need to be a role model and make time for underrepresented students, as over 30% of the students at the research site came from a diverse background. In addition to working long hours at school, John was also actively involved in the community and his church.

John is an excellent teacher as evidenced by his students' academic results and classroom observations. According to recent PDE PVAAS reports, John's students exceeded yearly growth projections by a significant margin. John's commitment to excellence caught the attention of several community leaders, and the Chamber of Commerce recently recognized him as teacher of the year. He is also a well-respected basketball coach and a former college athlete.

John rarely lets his guard down and prefers to be by himself or with his closest friends. He describes himself as having obsessive compulsive disorder (OCD). John is a deliberate and strategic decision maker. Although the researcher attempted to bracket assumptions during the interview process, because John is an effective teacher and described as an introvert who spends more time than most working independently to hone

his craft, the researcher assumed that John was resistive to the collaborative instructional coaching process.

Table 4.8

John's Quotes Related to Codes

Codes	Quotes
Skill sets	Coaches have to be self confident but without ego . . . credible and experienced teachers who successfully worked in similarly challenging environments . . . They need to know curriculum and instructional strategies inside and out . . .They have to have very good people skills and be able to build relationships . . . They have to be master communicators and flexible . . . They need to know how to get people to work together, work as hard as the best teachers, and have an understanding of the direction that the school needs to go. They need to try to understand what it is like to walk in my shoes . . . They have to be able to analyze data and target problem areas. They need to bring problems to the team for us to solve together.
Challenges	"I was apprehensive about coaching at first because you have to let your guard down . . . You need to put your ego down . . . Taking constructive criticisms from your peers is very difficult to do. People are much more receptive now, but there was a lot of negative talk at first. Ultimately, coaching has been a great experience for me, and I would consider myself receptive and an advocate for the process. But it took a lot of time to build trust and let my guard down . . . You have to pick the right coach and have levels of consistency . . . There are challenges with perception. If you are a coach, and I am not, then what does that make me? Many of the most experienced teachers, including myself, had difficulty getting over the fact that most of the coaches had less experience and it took a lot of time to believe that the right coaching faculty decisions were made. Coaching was not well-received at first, but once people trusted the process and saw it was working, it took off and changed our school . . . [The] administration had to set the right tone in [the] building, encourage risk taking, communicate, and not use the coaches as administrators . . . Admin hired the right coaches . . . There [is] a wide range of skills and personalities within our coaching team. I worked primarily with only one coach . . . Having a variety of coaches with different personalities and skills probably helped more teachers . . . What I needed and looked for is probably different than others.

Codes	Quotes
	Does my content area affect my receptiveness to coaching? No, not really. The skills of a coach are far more important than a teacher's content assignment . . . I was resistive because I didn't know the process and wasn't convinced it would work. I am now receptive to coaching because my coach is very competent and has helped me, not because I'm a math teacher . . . I think more experienced teachers are always going to be less receptive at first because they have been through so many ineffective initiatives, and they will be more guarded with having a colleague with less experience than them, teaching them how to be a better teacher . . . However, when the experienced teachers saw that it was working, the experienced teachers got nearly everyone in our school on board with the process.
Coaching practices	Focused strategies on aligning curriculum to make sure we were teaching our kids the right skills . . . formative assessments to drive instruction . . . how to use reading and writing to increase student thinking and learning . . . best teaching practices to increase engagement . . . differentiation . . . visiting other teachers' classrooms to watch how others were teaching concepts and gaining new ideas . . . strategies on how to move from student basic practice to conceptual understanding . . . how planning, teaming, and working together [make] us better and [keep] us on the right page . . . collaborative problem solving . . . sharing with us what is working elsewhere and growing trends within the field . . . consistency . . . how to help students learn the most . . . how to use technology with purpose . . . building off of my individuals' skills as opposed to deficits . . . self- and team reflection . . . identifying what is in our control and letting go of what is not . . . individualized support.
Outcomes	Oftentimes you're teaching, but it doesn't mean that students are learning. I think coaching really helped us as far as planning and student engagement . . . Personally, it made me and many others better teachers and our achievement results since implementing coaching . . . Coaching gave us direction and more skills. Most of us now know how to interpret data, formatively assess students . . . Students are more engaged and better behaved throughout our school . . . We have fresh ideas and they taught old dogs new tricks . . . There is no negative talk anymore about coaching, and collaboration has become part of our school culture. Most of us are now contributing and learning from one another.

Frank is an automotive instructor who has worked at the research site for 33 years. Frank has a reputation of being strongly connected with industry and is transparent with his opinions about the research site, colleagues, local politics, and community needs. Frank is quick to publically congratulate colleagues on achievements and will confront or challenge others who he feels are not doing their job effectively. Frank has expressed that his primary purpose at the research site is to help students become employable and to build the necessary skills "to pay the bills."

Frank described himself as an "underdog who has made it" and openly shares with colleagues and students the challenges of growing up economically disadvantaged and the importance of mentors to him throughout his life. Frank has demonstrated a longstanding commitment to students who need additional support by working with small groups after school, by mentoring individuals throughout the community, and by providing a tremendous amount of personal resources to help students and families throughout the region.

Frank talked about the days when he first started at the high school and attempting to figure out how to get to work because he did not have enough money to put gas in his vehicle. "Times were really tough, but through hard work, real estate, and business investments . . . I feel really blessed." Frank now has multiple resources and enjoys helping others in need.

Frank has expressed frustration about a perceived disconnect that some colleagues and administrators have with industry and community needs. Frank works extremely hard and reported that he is at a point in his career where he will only buy in to initiatives if there is clear purpose. He has stated, "I'm done doing things out of compliance that make

no sense for [the] kids or me." Frank has described that he and many others have become "initiative fatigued" under previous administrators due to the amount of changes that have lacked relevance. Although the researcher attempted to bracket his assumptions during the interview process, his supposition based on previous working relationships was that Frank was low to moderately receptive to the instructional coaching process. The reasons for this supposition were that Frank appeared very confident with his teaching skills, voiced pride in building a program based on industry needs, and was nearing retirement.

Four common themes emerged from the coding process. The first theme focused on what teachers perceived to be the desired skill sets of an instructional coach. The second theme concentrated on the challenges with implementing instructional coaching at the high school level. The third theme centered on instructional coaching experiences that had the greatest effect on changing instructional practice. The final theme concentrated on the effects of the instructional coaching process. Figure 4.12 illustrates the four common themes that emerged through the phenomenological interview process.

The first common theme centered on the desired skill sets of an instructional coach. All three of the interviewees identified interpersonal skills, credible classroom experience, and strong instructional knowledge as being required skills for an instructional coach. The subjects provided multiple interpersonal examples, stating a coach needs to be able to effectively communicate, demonstrate trust, show empathy, be supportive, listen, and act in a nonjudgmental and confidential manner. The subjects suggested that credible classroom experience and instructional skill sets were also essential for classroom teachers to be receptive to instructional coaching.

Table 4.9

Frank's Quotes Related to Codes

Codes	Quotes
Skill sets	The coaches need to be able to establish trust and have practical teaching skills that will help me and all teachers . . . They need to be passive, good listeners, nonthreatening, professional, confidential, trusting . . . have the ability to connect with me and work as hard as I do . . . They need to be highly skilled and patient. They don't need to have taught what I teach, but the need to have credibility [in] teaching the same types of students I teach . . . They need to be able to deal with adult personalities and the egos in our building . . . They have to be master facilitators.
Challenges	It begins with leadership and effective communication . . . The leader sets the tone and can explain how and why things need to be done, and they need to make sure there is no recourse from working with a coach, even when we screw up . . . I was apprehensive to coaching at first. Having someone critiquing my work that never taught what I am teaching . . . it was uncomfortable . . . I used to think, "I teach technical skills. The rest of the teachers are here to teach the academic skills. Work with them, not me . . . It takes time to build trust . . . There is one coach that I do not care for and won't waste my time with that person . . . however, I work well the others, especially [name]. There are some English and history teachers in this school that don't get it and have major egos.. . . .They think that they are too good for coaching and that the other teachers and coaches are beneath them . . . Not all of them. There are some really good English and history teachers, too, but there are a few in our school that slow down our progress and are only worried about themselves . . . Also, people get old and stuck in their ways and don't want to change . . . It takes a lot more time to convince old heads like me, and I have to see it's credible . . . Lord knows, I have seen so many bad initiatives come and go in our school . . . Funding has to be an issue. It costs a lot to free up a teacher to work with teachers instead of kids . . . You also have to get faculty buy-in and have effective communication . . . It can't be top-down management. It would have been a disaster in our school if coaching was implemented top down. You have to make sure you hire coaches with the right people and teaching skills and give them time to build relationships.

Table 4.9 (continued)

Codes	Quotes
	The coaches' skill levels are the most important . . . I buy in to coaching not because of who I am or what I teach. I now enjoy coaching because it works for me and my kids. If all the coaches were incompetent like the one, then I wouldn't use it and nor would anyone else. The downside of most everyone buying into the coaching process is that our coaches are now stretched too thin and are not always available. The demand has become higher than the supply.
Coaching practices	Admin began by promoting collaboration and asking for teachers' opinions. That meant a lot to most of us . . . Several different coaches were available, and we had a choice whether we used coaching or not. We appreciated this type of approach from administration . . . Having a choice to try it with no commitment or recourse and then having people see how well it worked helped to make the school receptive to coaching over time . . . It has to be nonthreatening. Through coaching I learned how to better plan, use word walls [and] graphic organizers, better engage my students, implement writing, differentiate, use informal (formative) assessment and daily reading strategies . . . I became much more reflective . . . Coaching really made me take a hard look at what I was doing as a teacher and at my instruction . . . We work together, plan together, and figure it out together.
Outcomes	Coaching has transformed how we teach in the technical wing and throughout our school. A couple of us on the technical wing embraced the literacy and numeracy strategies and working with coaches, and it created a healthy competition between us. When you walk through the technical wing, you see word walls, high engagement, and best learning practices because of our coaches. Our instruction has improved and our data shows our results. When I walk through the rest of the school and visit academic classrooms, I now see much better engagement and teachers and students working together . . . Students are better behaved because they are more engaged . . . Instruction has become much better, and we are working as faculty more than we ever have because of coaching. Coaching has changed our school. Our student achievement results leapfrogged over 200 high schools. This did not happen by chance . . . coaching and effective leadership that valued teachers working together and taking risks has transformed our school.

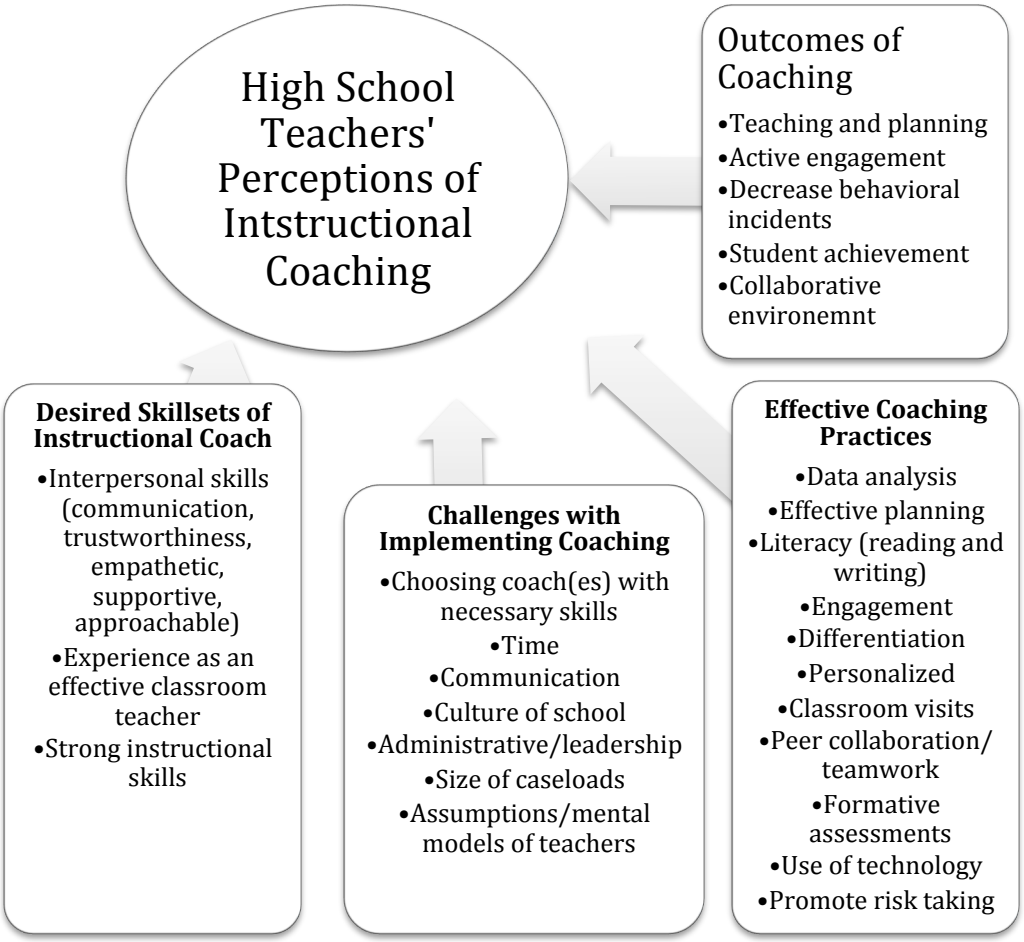

Figure 4.9. Common themes of teacher perceptions.

The second common theme emerged when the classroom teachers shared their beliefs on why they thought that the majority of high schools struggled with implementing instructional coaching. All 3 teachers expressed that they were not surprised that most high schools struggled with implementation. They shared seven reasons why they believed most high schools do not implement coaching effectively. The common perceived challenges to implementing coaching included

1. Assuring that an instructional coach has the necessary skill sets.

2. Insufficient time to build trust and implement a coaching process.
3. Ineffective communication.
4. Lacking a school culture of collaboration.
5. Administration not supporting or understanding the process of effective coaching.
6. Caseload size of coaches
7. Classroom teachers' mental models, experiences, and fears of change.

Through the coding process, 11 common instructional coaching approaches emerged that the classroom teachers perceived as having the greatest effect on changing instructional practice at the research site. The approaches included

1. Understanding how to collect and analyze student data.
2. Effective planning.
3. How to embed daily reading and writing into lessons.
4. Learning about effective engagement strategies.
5. Differentiation based on student needs.
6. Personalized coaching based on individual teacher needs.
7. Collegial classroom visits.
8. Infusing a collaboration/teamwork approach.
9. How to formatively assess students throughout lessons.
10. Use of technology to increase learning.
11. Promote/encourage risk taking.

The final common theme identified five perceived effects of instructional coaching. The subjects who experienced instructional coaching and who have been immersed in the culture at the research site credited instructional coaching with

1. Improving how they teach and plan.
2. Increasing active engagement throughout the school.
3. Decreasing behavioral infractions from students.
4. Increasing student achievement results.
5. Creating a school-wide collaborative environment.

Results and Interpretations

This mixed-methods research study explored how classroom teachers perceived and experienced instructional coaching at an urban high school in Pennsylvania. The classroom teachers credited instructional coaching with improving how they teach and plan, increasing active engagement throughout the school, decreasing behavioral infractions from students, increasing student achievement results, and creating a school-wide collaborative environment. The teachers also identified the desired skill sets of an instructional coach, the challenges with implementing instructional coaching at the high school level, and the coaching approaches that had the greatest effect on changing instructional practice. The study also found statistically significant differences when exploring how content area affects receptivity and differences with how a classroom teacher's number of years of experience affects receptivity to coaching. This section summarizes the most relevant findings and triangulates results with key elements from the review of literature.

The research site has been implementing a responsive coaching model for over four years, and the quantitative survey results and teacher interviews suggest that the majority of the classroom teachers have become receptive to the coaching process over time. All interviewed teachers reported that receptivity to coaching was low when it was first introduced, but receptivity increased rapidly throughout the school when teachers observed that the process was effective, safe, and nonevaluative. Each interviewed teacher attributed coaching to creating a collaborative school culture and improving how most teachers teach.

The literature review showed that instructional coaching is a research-based best practice capable of significantly improving teacher practice; however the majority of high schools fail to implement a coaching model effectively. The literature identified characteristics of effective coaching models and the common challenges that cause most high schools fail with implementation. The results of this study affirmed the literature and the researcher's beliefs about why most high schools struggle to implement instructional coaching effectively. The literature review and research study suggested that implementation is complex. Coaches must have essential pedagogical and collaborative skill sets, and leaders must understand the role of the coach. It takes time for the coaching process to evolve. The researcher believes that the characteristics of effective coaching and the complexities with implementing a collaborative leadership approach are either ignored or misinterpreted by leadership teams attempting to implement coaching at the high school level.

Konza and Michael (2010), McKenna and Walpole (2010), and Marsh et al. (2008) described how poor communication, top-down leadership, lack of time,

departmental complexities, overextended caseloads, and coaches lacking necessary skills negatively affected implementation of instructional coaching. The data collected suggests that the research site avoided most of these implementation pitfalls. The findings from this mixed-methods study indicated that the administration effectively communicated the purpose of coaching to faculty and respected collegial confidentiality and classroom teacher input. The instructional coaches had the necessary skill sets to lead change through a collaborative process. The teacher interviews uncovered frustrations about coaches carrying large caseloads and not always having enough time to follow through with teacher requests, and the quantitative survey results affirmed the literature findings associated with departmental complexities. Although all departmental scores were considered high, the adaptive TRIS survey found that the math and science and elective teachers' scores were significantly higher than the humanities teachers' scores. These differences were found in all three of the measured categories: relationships between teacher and coach, coaching approaches used, and the perceived impact of instructional coaching.

Bean (2010), Shanklin (2006), and Konza and Michaels (2010) reported the characteristics of an effective coaching model along with the required skill sets of an instructional coach. The following list emerged by triangulating the characteristics and skill sets found in the literature review with the results of this mixed-methods study. The teacher interviews, quantitative surveys, and literature review affirmed that an administrator must first establish a collaborative culture and clearly communicate the purpose of instructional coaching. Then, an instructional coach must

1. Have the necessary soft skills to build trust and collaborate with all teachers at all levels of knowledge and experience.
2. Have strong instructional skills that are literacy based and can be implemented with all content areas.
3. Understand and utilize data to inform teacher planning.
4. Provide ongoing, job-embedded professional learning based on individual teachers' needs.
5. Engage in classroom reviews that are cyclical and build knowledge over time.
6. Support, rather than evaluate, teachers.

As previously stated, this mixed-methods research study explored how classroom teachers perceived and experienced instructional coaching at one urban Pennsylvania high school with the hope that the findings might assist other high schools with their implementation efforts. The findings from this study aligned closely with those reported in the literature shared throughout Chapter 2. When these results were triangulated, three essential processes emerged for successful implementation of instructional coaching. First, the school leader must establish a collaborative school culture by demonstrating shared leadership and effectively communicating the purpose of instructional coaching. The findings from the teacher interviews and the literature reviewed in Chapter 2 suggested that a trusting environment was essential for the coaching process to be effective. Pervasive communication about the purpose of instructional coaching and assuring that the process was nonevaluative were necessary to build trust. The leader must understand the delicate nature and the importance of establishing and sustaining trust between the coaches and teachers, and commit to not using the coaching model as a

disciplinary or remediation tool for ineffective teachers. The administrator must also never place a coach in an evaluative situation.

Second, the leadership team must select coaches who have the necessary skill sets to effectively build strong relationships with faculty and have the instructional skills to help teachers transform practice. An instructional coach must have credibility with faculty as an accomplished teacher, understand how to use data to drive planning and instruction, and embrace a collaborative process. A coach must have effective interpersonal skills and instructional knowledge, and be able to empathize with the challenges of being a classroom teacher.

Third, a high school should anticipate and plan for initial resistance and departmental complexities and should only have instructional coaches work with teachers who want to work with a coach. The teachers with 11–20 or 21 or more years of experience explicitly shared that nearly all experienced teachers had been through a litany of ineffective school initiatives, and most teachers initially had strong reservations about having a peer critiquing their professional work. Teachers need time to adjust to a collaborative model and to have observable evidence that the coaching practice has integrity and is beneficial to their development. Coded throughout the interviews and as indicated in the survey, over time nearly all teachers became receptive to the coaching process. Teachers indicated that making the process voluntary was an important variable that helped most teachers embrace instructional coaching.

The literature explained departmental complexities, and the adapted TRIS survey found that humanities teachers had lower scores than math, science, and elective teachers. Although levels of receptivity differed by department, the interviews showed a common

belief that the quality of the instructional coach and the trust level that teachers had with the administration had greater effects on receptivity to coaching than content area or years of experience. The adapted TRIS data suggested that a more experienced teacher would be less receptive to instructional coaching in comparison to a teacher with 1–10 years of experience. But as the teachers indicated during the interviews, experienced teachers bought in heavily once they saw that the process was beneficial. According to the classroom teachers, once the most experienced group of teachers became receptive to instructional coaching, the school as a whole became more collaborative.

Summary

The mixed-methods research study explored how classroom teachers perceive and experience instructional coaching at a Pennsylvania urban high school. Through the interview process, the classroom teachers credited instructional coaching with improving how they teach and plan, increasing active engagement throughout the school, decreasing behavioral infractions from students, increasing student achievement results, and creating a school-wide collaborative environment. The study identified common themes regarding what classroom teachers believed to be the most important skill sets of an instructional coach, the challenges with implementing instructional coaching at the high school level, and the coaching approaches that had the greatest effect on changing instructional practice.

Statistically significant differences were discovered when comparing departmental assignments to receptivity to the coaching process. The results indicated that while all adapted TRIS categorical group scores were high, the math, science, and elective teachers' scores were significantly higher on multiple questions in comparison to

English and social studies teachers. The study also reported that less experienced teachers had higher TRIS scores than their more experienced peers. However, these differences were not statistically significant, and experienced teachers became more receptive to the coaching process over an extended period. Although differences were found through the quantitative analysis, the interviewed teachers strongly suggested that the quality of the instructional coach and the trust level that teachers had with the administration had greater relationships to receptivity than content area or years of experience.

The findings from this study affirmed the literature reporting that for a high school to increase the likelihood of successfully implementing an instructional coaching model, an administrator must first establish a collaborative culture and clearly communicate the purpose of instructional coaching. Then an instructional coach must have the necessary interpersonal skills to build trust and collaborate with all teachers along with the instructional strategies that can be implemented across all content areas. Finally, the coach must understand and utilize data to inform teacher planning while providing embedded professional learning based on individual teachers' needs in a supportive role.

Chapter 5: Conclusions and Recommendations

Introduction

Instructional coaching has been recognized as a research-based professional development model that improves teacher practice and increases student achievement. The problem is that most high schools attempting to implement instructional coaching fail to have instructional coaches work directly with teachers for an adequate amount of time, which minimizes the effect of the coaching process. The purpose of this explanatory mixed-methods study was to examine how classroom teachers perceived and experienced instructional coaching at an urban high school in Pennsylvania and to measure the relationship of teachers' experience and content assignment to their receptivity to coaching. Three classroom teachers were interviewed several times throughout the study in an attempt to capture how teachers experienced the phenomenon of instructional coaching. In addition, 77 classroom teachers completed an adapted TRIS survey to explore how teachers perceived coaching and to compare how content area and years of experience affect the relationships, characteristics, and impact of the instructional coaching.

Classroom teachers credited instructional coaching with improving how they teach and plan, increasing active engagement throughout the school, decreasing behavioral infractions from students, increasing student achievement results, and creating a school-wide collaborative environment. Through the interview process, common themes emerged regarding the desired skill sets of an instructional coach, the challenges with implementing instructional coaching at the high school level, the coaching approaches that had the greatest effect on changing instructional practice, and the

perceived results of coaching. Through quantitative analysis of the adapted TRIS results, the study found statistically significant differences when comparing how content area affects receptivity to instructional coaching. Differences were also found when comparing how teacher experience affected receptivity; however these differences were not statistically significant.

Conclusions

One central research question and two subquestions were examined in this explanatory mixed-methods study. The central research question was, How do classroom teachers perceive instructional coaching at an urban high school in Pennsylvania? Qualitative teacher interviews were used to investigate the overarching research question. The two investigative sub questions were as follows: First, what is the relationship between a classroom teacher's content area assignment and receptivity instructional coaching? Second, what is the relationship between a classroom teacher's years of experience and receptivity to instructional coaching?

Central Research Question: How Do Teachers Perceive Instructional Coaching?

Three classroom teachers were interviewed several times throughout the study. The first subject was a humanities teacher, the second was a math and science teacher, and the third was an elective teacher. One subject was female and 2 were male. One interviewee was African American and 2 were Caucasian. One subject had 1–10 years of experience, the second had 11–20 years, and the third had over 21 years of experience.

Throughout the interview process, teachers reported that receptivity to instructional coaching was low when coaching was first introduced but that receptivity increased rapidly throughout the school when teachers observed that the process was

effective, safe, and nonevaluative. The teachers attributed coaching with improving how they taught and planned, increasing active engagement throughout the school, decreasing behavioral infractions from students, increasing student achievement results, and creating a school-wide collaborative environment.

The author of this study used to work at the research site. When candidates were selected for interviews, he wanted a representative from each of the content areas and experience groupings. He also wanted equal gender and race representation. He attempted to choose subjects who were both receptive and nonreceptive to the instructional coaching process. The researcher was surprised that all 3 participants expressed high receptivity to the instructional coaching process. The researcher was initially concerned that the subjects were not being forthright with their perceptions; however, the data collected from the quantitative analysis affirmed that the overwhelming majority of classroom teachers at the research site were receptive to instructional coaching and found a high level of value from the instructional coaching process.

Common themes emerged through the interview process to assist in solving implementation challenges. The first theme focused on the desired skill sets of an instructional coach. The second theme identified perceived challenges with implementing instructional coaching at the high school level. The third theme identified the coaching approaches that classroom teachers believed to be the most effective. The final theme identified the perceived effects of instructional coaching. The themes are described in more detail as follows.

The first common theme centered on the desired skill sets of an instructional coach. All 3 of the interviewees identified interpersonal skills, credible classroom

experience, and strong instructional knowledge as being required skills for an instructional coach. The subjects provided multiple interpersonal examples of how a coach needs to be able to effectively communicate, demonstrate trust, show empathy, be supportive, listen, and act in a nonjudgmental and confidential manner. The subjects suggested that credible classroom experience and instructional skill sets were also essential for classroom teachers to be receptive to instructional coaching.

The second common theme emerged when the classroom teachers shared their beliefs on why they thought that the majority of high schools struggled with implementing instructional coaching. All 3 teachers expressed that they were not surprised that most high schools struggled with implementation and shared seven reasons why they believed most high schools do not implement coaching effectively. Topics of trust, coaching skill level, and system issues emerged as teachers shared what they believed were the challenges with implementing coaching at the high school level. The common perceived challenges to implementing coaching included

1. Assuring that an instructional coach had the necessary skill sets.
2. Insufficient time to build trust and implement a coaching process.
3. Ineffective communication.
4. Lacking a school culture of collaboration.
5. Administration not supporting or understanding the process of effective coaching.
6. Caseload size of coaches.
7. Classroom teachers' mental models, experiences, and fears of change.

The classroom teachers asserted that instructional coaching improved the culture and learning within their school. Through the open coding process, 11 common approaches that were believed to have the greatest effect on transforming instructional practice emerged. The coaching approaches that had the greatest effect on changing teacher practice included

1. Understanding how to collect and analyze student data.
2. Effective planning.
3. How to embed daily reading and writing into lessons.
4. Learning about effective engagement strategies.
5. Differentiation based on student needs.
6. Personalized coaching based on individual teachers' needs.
7. Collegial classroom visits.
8. Infusing a collaboration/teamwork approach.
9. How to formatively assess students throughout the lessons.
10. Use of technology to increase learning.
11. Promote/encourage risk taking.

The final common theme identified five perceived effects of instructional coaching. The subjects who had experienced instructional coaching and who had been immersed in the culture at the research site credited instructional coaching with

1. Improving how they taught and planned.
2. Increasing active engagement throughout the school.
3. Decreasing behavioral infractions from students.
4. Increasing student achievement results.

5. Creating a school-wide collaborative environment.

To conclude, the interview process identified common themes of what classroom teachers believed affected the implementation of instructional coaching at the high school level. They credited the instructional coaching process with improving how they taught and planned, increasing active engagement throughout the school, decreasing behavioral infractions from students, increasing student achievement results, and creating a school-wide collaborative environment. The classroom teachers suggested that the interpersonal skills and instructional expertise of the coaches coupled with a positive work environment established by administration were essential for instructional coaching to affect teacher practice within a high school setting.

Subquestion 1: Relationship Between Content Area Assignment and Coaching

The adapted TRIS measured how classroom teachers perceive relationships and approach the instructional coaching process. Seventy-seven teachers completed the adapted TRIS survey and the results were used to compare differences between how teachers responded based on their content assignment. Although all content mean average categorical scores were high, ranging between 3.024 and 4.273 on a 5.00 scale, the math, science, and elective content areas had higher mean average scores than the English and social studies areas in all measured categories. In addition, math, science, and elective teachers' mean average scores were higher than English and social studies teachers' scores on 25 of the 32 individual survey questions. The differences on five of these individual questions were statistically significant.

Following the quantitative survey analysis, the classroom teachers who were interviewed throughout the study were asked if these content area differences surprised

them. All three subjects reported that they were not surprised by the results. One teacher shared that he believed that some of the humanities teachers looked down on many of the coaches, had superiority complexes, and would never consider changing their ways. The other two teachers suggested that because instructional coaching focused so heavily on reading and writing practices, several humanities teachers were still receptive but not as receptive as the other departments because they spent most of their professional career developing their expertise on how to teach students to be better readers and writers.

Subquestion 2: Relationship Between Years of Experience and Coaching

The adapted TRIS measures how classroom teachers perceive relationships and approach the instructional coaching process. Seventy-seven teachers completed the adapted TRIS survey, and the results were used to compare differences between years of experience and receptivity to coaching. For this subquestion, data were collected from 30 teachers with 1–10 years of experience, 27 teachers with 11–20 years, and 19 teachers with 21 or more years of experience. One respondent did not identify how long he or she had been teaching.

Although all categorical scores were high, ranging between 3.119 and 4.343 on a 5.00 scale, differences were found in how years of experience affected receptivity to coaching. Teachers with 1–10 years of experience had higher scores in all three categorical areas (relationship, approach, and impact) in comparison to teachers with 11–20 or 21 or more years of experience. In addition, teachers with 1–10 years of experience had higher mean average scores on 25 of 32 individual questions. However, none of these categorical or individual question differences were statistically significant. Surprisingly, when the results were compared between teachers with 11–20 years of experience and

teachers with 21 or more years of experience, the teachers with 21 or more years of experience had higher mean average scores on two of the three categorical scores and 22 of 32 individual questions. However, these differences were not found to be statistically significant.

Following the quantitative survey analysis, the classroom teachers who were interviewed throughout the study were asked if these differences by experience group surprised them. All three reported that it did not surprise them that all groups were receptive and that the teachers with 1–10 years of experience were the most receptive to a collaborative process. Two of the three subjects indicated that they were surprised that teachers with 21 or more years of experience had higher impact scores and higher overall scores than teachers with 11–20 years of experience.

When the data on experience were being reviewed, John and Frank both shared how most teachers were resistive to the coaching process when it was first introduced. The subjects indicated that it took a great deal of time for the coaches to build trust with experienced faculty, but once trust was established, the coaching initiative became widely supported throughout the school. John shared that the investment of time to build trust with the experienced faculty was essential to the school's successful implementation of instructional coaching.

During the interviews where the data were reviewed, both John and Frank suggested that content area was much less important of a variable than the coach's skill level and support from the administration. John stated,

> I was resistant at first, but now I enjoy working with my coach. It has changed how I teach and our results speak for themselves. However, if my coach was not

> skilled and trustworthy, or if the principal attempted to use coaching as an extension of administration, then I wouldn't use a coach.

Frank suggested that he used coaching because he respected his coach and the principal who introduced coaching. Most importantly, the process was beneficial to him and his students. He indicated that if the coach had been ineffective, then he would not have invested time or effort into the process.

Recommendations

Instructional coaching is a research-based best practice to improve teacher skill level. According to J. Knight (2011), instructional coaches must work directly with classroom teachers to change practice, and the most pervasive problem with instructional coaching at the high school level is that coaches are not working directly with classroom teachers for an adequate amount of time. Although the literature clearly identifies the problem with ineffective coaching implementation at the high school level, little is known about how high school classroom teachers perceive and experience instructional coaching. Therefore, this study was intended to capture the perceptions and experiences of high school teachers to learn more about how to effectively implement instructional coaching.

Increasing the amount of time instructional coaches work directly with teachers is important for two reasons. First, because correlations have been found between the amount of time an instructional coach and teacher collaborate on long-term changes in teachers' instructional practice. Second, research suggests a positive correlation between student achievement and the amount of time an instructional coach collaborates with a teacher (L'Allier et al., 2010).

Five recommendations emerged from this study for high schools attempting to implement an instructional coaching model. The five recommendations are as follows:

1. When selecting an instructional coach, assure that he or she has the appropriate interpersonal and instructional skills and has credibility with the faculty.
2. The administration must embrace the complexities of instructional coaching while promoting a teacher-centered collaborative environment.
3. Changing teacher practice is complex, and instructional coaching requires a long-term commitment for full implementation. The research site made historic academic gains during the second, third, and fourth years of instructional coaching. However, it took approximately 1 year for teachers to build trusting relationships with the instructional coaches.
4. Anticipate and prepare for departmental complexities from humanities teachers and less receptivity from the most experienced teachers. Although statistically significant differences were found between humanities and other content areas and the most experienced teachers were less receptive to coaching than their peers, schools should continue to offer the opportunity for collaborative instructional coaching to all teachers. Not all humanities teachers will resist coaching, and buy-in from experienced teachers may eventually be the catalyst for whole-system implementation.
5. Value teachers' autonomy by making the instructional coaching voluntary. Eliminating the chance for a teacher to say no to the instructional coaching process also eliminates their chance to say yes and embrace an authentic, collaborative process.

There are three suggested follow-up studies to this research. First, a study should be conducted at the research site exploring the perceptions of instructional coaches on their perceived effects on transforming teacher practice that focuses specifically on the strengths and challenges of implementation. Second, as suggested by the classroom teachers, researchers should measure how trust of the administration and of the instructional coaches affects implementation of the instructional coaching process. Third, this study should be replicated across multiple schools to obtain a larger sample size in order to capture additional perceptions of classroom teachers while reassessing the effect of departmental assignment and years of experience.

Summary

Instructional coaching has been recognized as a research-based professional development model that improves teacher practice and increases student achievement. The problem is that most secondary schools attempting to implement instructional coaching have failed to have instructional coaches work directly with teachers for an adequate amount of time, which minimizes the effect of the coaching process. The purpose of this study was to examine how classroom teachers perceive instructional coaching at an urban high school in Pennsylvania and to measure the relationship of teachers' experience and content assignment to their receptivity to coaching.

Three classroom teachers were interviewed several times using a phenomenological approach to explore how classroom teachers perceived and experienced instructional coaching. Through the interview process, the classroom teachers credited instructional coaching with improving how they teach and plan, increasing active engagement throughout the school, decreasing behavioral infractions

from students, increasing student achievement results, and creating a school-wide collaborative environment. Common themes emerged regarding the desired skill sets of an instructional coach, the challenges with implementing instructional coaching at the high school level, the coaching approaches that had the greatest effect on changing instructional practice, and the perceived effects of the coaching process. Teachers shared that interpersonal skills and instructional expertise of the coach and a positive work environment established by the administration are essential for instructional coaching to affect teacher practice within a high school setting. For coaching to transform a school, the coaches must be highly skilled, have credibility with faculty, and have exceptional interpersonal skills. In addition, the administrative team must support and encourage a collaborative, teacher-centered environment.

Seventy-seven classroom teachers completed an adapted version of the TRIS to measure the relationships, characteristics, and impact of the instructional coaching model being implemented at an urban high school in Pennsylvania. The study found statistically significant differences when comparing how content area affects receptivity to instructional coaching. Although all content area scores were considered high, the results indicated that mathematics, science, and elective teachers were more receptive to the coaching process than English and social studies teachers. Differences were also found when comparing how teacher experience affected receptivity; however these differences were not statistically significant.

To conclude, five recommendations emerged through this research process for leadership teams and considering instructional coaching. First, when selecting instructional coaches, schools should ensure they have the appropriate interpersonal and

instructional skills and have credibility with faculty. Second, the administration must embrace the complexities of instructional coaching while promoting a teacher-centered, collaborative environment. Third, schools should keep in mind that changing teacher practice is complex and instructional coaching requires a long-term commitment for full implementation. Fourth, schools should anticipate and prepare for departmental complexities from humanities teachers and less receptivity from the most experienced teachers. However, schools should continue to offer instructional coaching to all teachers. Fifth, schools should value teachers' autonomy by making the instructional coaching process voluntary.

Finally, the completion of this research study and writing of a dissertation allowed the author to demonstrate four of the Drexel University Educational Leadership competencies. First, instructional coaching was a core component of the research site's transformational plan. Learning more about instructional coaching and how collaborative leadership was used to successfully implement coaching demonstrated competence of leadership learning focused on creating communities that are built for sustainable change. Second, through conducting research, suspending judgment, and completing a thorough literature review, the researcher demonstrated the ability to apply sustainable personal growth. Third, through the analysis of findings, the researcher demonstrated the ability to transfer skills into meaningful action. Finally, although it was not the purpose of the study, the transformational results that emerged from the research site suggested that the researcher, who served as the principal during the transformation, has the competencies to lead complex organizations.

References

Ajjawi, R., & Higgs, J. (2007). Using hermeneutic phenomenology to investigate how experienced practitioners learn to communicate clinical reasoning. *The Qualitative Report, 12*(4), 612–638. Retrieved from http://nsuworks.nova.edu/tqr/vol12/iss4/6

Anderson, R., Feldman, S., & Minstrell, J. (2014). Understanding relationship: Maximizing the effects of science coaching. *Education Policy Analysis Archives*, *22*(50–57), 1–25. doi:10.14507/epaa.v22n54.2014

Atteberry, A., & Bryk, A. S. (2011). Analyzing teacher participation in literacy coaching activities. *Elementary School Journal*, *112*(2), 356–382.

Bean, R. M. (2010). Effective literacy coaching: A journey, not a destination. In J. Cassidy, S. D. Garrett, & M. Sailors (Eds.), *Literacy coaching: Practice & research: 2009 Ceder yearbook* (pp. 133–144). Corpus Christi, TX: Texas A&M University-Corpus Christi.

Bean, R. M., & Carroll, K. E. (2006). The literacy coach as a catalyst for change. In C. Cummins (Ed.), *Understanding and implementing reading first initiatives: The changing role of administrators* (pp. 139–152). Newark, DE: International Reading Association.

Bean, R. M., & Swan Dagen, A. (2012). *Best practices of literacy leaders*. New York, NY: Guilford Press.

Binkley, R., Keiser, M., & Strahan, D. (2011). Connected coaching: How three middle school teachers responded to the challenge to integrate social studies and literacy. *Journal of Social Studies Research*, *35*(2), 131–162.

Blamey, K. L., Meyer, C., & Walpole, S. (2008). Middle and high school literacy coaches: A national survey. *Journal of Adolescent & Adult Literacy*, *52*(4), 310–323.

Bloomberg, L. D., & Volpe, M. (2012). *Completing your qualitative dissertation: A roadmap from beginning to end* (2nd ed.). Los Angeles, CA: Sage.

Borman, J., & Feger, S. (2006). *Instructional coaching: Key themes from the literature*. Providence, RI: The Educational Alliance Brown University. Retrieved from http://www.alliance.brown.edu/pubs/pd/tl_coaching_lit_review.pdf

Brown, C. J., Stroh, H. R., Fouts, J. T., & Baker, D. B. (2005). *Learning to change: School coaching for systemic reform.* Seattle, WA: Fouts and Associates.

Brown, T., & Kātz, B. (2009). *Change by design*. New York, NY: Harper Business.

Carey, K. (2004). The real value of teachers: Using information about teacher effectiveness to close the achievement gap. *The Education Trust, 8*(1), 3–42.

Casey, K. (2006). *Literacy coaching: The essentials*. Portsmouth, NH: Heinemann.

Carlisle, J. F., & Berebitsky, D. (2011). Literacy coaching as a component of professional development. *Reading & Writing*, *24*(7), 773–800. doi:10.1007/s11145-009-9224-4

Cassidy, J., Garrett, S., Maxfield, P., & Patchett, C. (2009). Literacy coaching: Yesterday, today, and tomorrow. *CEDER Yearbook*, 15–27.

Corcoran, T. (1995). *Helping teachers teach well: Transforming professional development* (CPRE Policy Brief No. 15-1). New Brunswick, NJ: Consortium for Policy Research in Education. Retrieved from http://www.cpre.org/Publications/rb16.pdf

Cornett, J., & Knight, J. (2009). Research on coaching. In J. Knight (Ed.), *Coaching: Approaches & perspectives* (pp. 192–216). Thousand Oaks, CA: Corwin Press.

Costa, A., & Garmston, R. (2002). *Cognitive coaching: A foundation for renaissance schools* (2nd ed.). Norwood, MA: Christopher-Gordon.

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson.

Croft, A., Coggshall, J., Dolan, M., Powers, E., & Killion, J. (2010, April). *Job-embedded professional development: What it is, who is responsible, and how to get it done well*. Issue brief. Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved from http://www.tqsource.org/publications/JEPD%20Issue%20Brief.pdf

Danielson, C. (2006). *Teacher leadership that strengthens professional practice*. Alexandria, VA: Association for Supervision and Curriculum Development.

Danielson, C. (2013). *The framework for teaching*. Retrieved from the Danielson Group website: http://www.danielsongroup.org/article.aspx?page=frameworkforteaching

Darling-Hammond, L., & Rothman, R. (2011). *Teacher and leader effectiveness in high-performing education systems*. Washington, DC: Alliance for Excellent Education.

Denton, C. A., & Hasbrouck, J. (2009). A description of instructional coaching and its relationship to consultation. *Journal of Educational & Psychological Consultation*, *19*(2), 150-175. doi:10.1080/10474410802463296

Devino, P., & Fitzsimons, S. (2008). Coaching effective teaching strategies. *Connecticut Accountability for Learning Initiative.* Retrieved from http://www.sde.ct.gov/sde/cwp/view.asp?a=2618&Q=321754

Dozier, C. (2006). *Responsive literacy coaching: Tools for creating and sustaining purposeful change.* Portland, ME: Stenhouse.

Duncan, M. (2006). *Literacy coaching: Developing effective teachers through instructional dialogue.* Katonah, NY: Richard C. Owens Publishers.

Ertmer, P. A., Richardson, J., Cramer, J., Hanson, L., Huang, W., Lee, Y., . . . Um, E. J. (2003). *Critical characteristics of professional development coaches: Content expertise or interpersonal skills?* (Draft paper). Retrieved from Purdue University website: http://www.edci.purdue.edu/ertmer/docs/MWERA_CoachChars.pdf

Fullan, M. (2010). *All systems go: The change imperative for whole systems reform.* San Francisco, CA: Corwin Press.

Gallucci, C., DeVoogt Van Lare, M., Yoon, I. H., & Boatright, B. (2010). Instructional coaching: Building theory about the role and organizational support for professional learning. *American Educational Research Journal*, *47*(4), 919–963. doi:10.3102/0002831210371497

Goe, L., Bell, C., & Litle, O. (2008). *Approaches to evaluating teacher effectiveness: A research synthesis*. Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved from http://nepc.colorado.edu/files/ttr-teval-tntp.pdf

Greenberg-Walt, C., & Robertson, A. (2001). The evolving role of executive leadership. In *The Future of leadership: Today's top leadership thinkers speak to tomorrows leaders* (pp. 139–157). San Francisco, CA: Jossey-Bass

Ippolito, J. (2009). Investigating how literacy coaches understand and balance responsive and directive relationships with teachers. *CEDER Yearbook*, 45–66.

Ippolito, J. (2010). Three ways that literacy coaches balance responsive and directive relationships with teachers. *Elementary School Journal*, *111*(1), 164–190.

Isaacs, J., & Magnuson, K. (2011, December 14). Income and education as predictors children's school readiness. *Social Genome Project Research*. Retrieved from http://www.brookings.edu/research/reports/2011/12/15-school-readiness-isaacs

Ivankova, N., Creswell, J., & Stick, S. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods, 18*(1), 3–20. doi:10.1177/1525822X05282260

Joyce, B., & Showers, B. (1980). Improving inservice training: The messages of research. *Educational Leadership, 37*(5), 379–385.

Kelley, T., & Littman, J. (2005). *The ten faces of innovation: IDEO's strategies for beating the devil's advocate and driving creativity throughout your organization.* New York, NY: Currency/Doubleday.

Knight, D. (2012). Assessing the cost of instructional coaching. *Journal of Education Finance*, *38*(1), 52–80.

Knight, J. (2007). *Instructional coaching: A partnership approach to improving instruction.* Thousand Oaks, CA: Corwin Press.

Knight, J. (2011). *Unmistakable impact.* Thousand Oaks, CA: Corwin Press.

Konza, D., & Michael, M. (2010). Supporting the literacy of diverse students in secondary schools. *The International Journal of Learning*, *17*(7), 193–207.

Kouzes, J., & Posner, B. (1995). *The leadership challenge: How to keep getting extraordinary things done in organizations.* San Francisco, CA: Jossey-Bass.

Krupa, E., & Confrey, J. (2012). Using instructional coaching: Customized professional development in an integrated high school mathematics program. *Yearbook (National Council of Teachers of Mathematics)*, *74,* 161–174.

L'Allier, S., Elish-Piper, L., & Bean, R. (2010). What matters for elementary literacy coaching? Guiding principles for instructional improvement and student achievement. *The Reading Teacher*, *63*(7), 544–554.

Leana, C. (2011). The missing link in school reform. *Stanford Social Innovation Review, 9*(4), 30–35.

Lemke, C. (2010). *Professional development: Ensuring a return on your investment.* Commissioned by Intel, Inc. Retrieved from http://www.intel.com/content/dam/doc/white-paper/education-professional-development-paper.pdf

Lieb, S. (1991). *Principles of adult learning*. Phoenix, AZ: Vision–South Mountain Community College. Retrieved from http://www.lindenwood.edu/education/andragogy/andragogy/2011/Lieb_1991.pdf

Marsh, J., McCombs, J., Lockwood, J., Martorell, F., Gershwin, D., Naftel, S,, et al, (2008). *Supporting literacy across the sunshine state: A study of Florida middle school coaches.* Santa Monica, CA: RAND Corporation.

Marzano, R. J. (2003). *What works in schools: Translating research into action.* Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R. J. (2000). *A new era of school reform: Going where the research takes us.* Aurora, CO: Mid-continent Research for Education and Learning. Retrieved from http://www.peecworks.org/peec/peec_research/I01795EFA.1/Marzano%20NewEraSchoolReform.pdf

Matsumura, L., & Wang, E. (2014). Principals' sense making of coaching for ambitious reading instruction in a high-stakes accountability policy environment. *Education Policy Analysis Archives*, *22*(50–57), 1–37. doi:10.14507/epaa.v22n51.2014

McCombs, J., & Marsh, J. (2009). Lessons for boosting the effectiveness of reading coaches. *Phi Delta Kappa*, *90*, 501–508.

McKenna, M. C., & Walpole, S. (2010). *Literacy coaching in the middle grades*. Retrieved from the Adlit.org website: http://www.adlit.org/article/36143

Miller, K. (2003, November). School, teacher, and leadership impacts on student achievement. *Mid-continent Research for Education and Learning Policy Brief.* Retrieved from http://www.bradthiessen.com/html5/m340/4i%20Marzano.pdf

Moustakas, C. E. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage.

Neufeld, B., & Roper, D. (2003). *Coaching: A strategy for developing instructional capacity—promises and practicalities*. Washington, DC: Aspen Institute Program on Education and the Annenberg Institute for School Reform.

Neuman, S., & Wright, T (2010). Promoting language and literacy development for early childhood educators: A mixed-methods study of coursework and coaching. *The Elementary School Journal, 111*(1), 63–86. doi:0013-5984/2010/11101-0004

Pennsylvania Department of Education. (2011). *Pennsylvania Department of Education*. Retrieved from http://www.pde.state.pa.us/portal/server.pt/community/pennsylvania_department_of_education/7237

Pennsylvania Department of Education. (2013). *Pennsylvania Department of Education*. Retrieved from http://www.pde.state.pa.us/portal/server.pt/community/pennsylvania_department_of_education/7237

Pennsylvania Department of Education. (2014). *Pennsylvania Department of Education*. Retrieved from http://www.pde.state.pa.us/portal/server.pt/community/pennsylvania_department_of_education/7237

Pil, F. K., & Leana, C. (2009). Applying organizational research to public school reform: The effects of teacher human and social capital on student performance. *Academy of Management Journal*, *52*(6), 1101–1124. doi:10.5465/AMJ.2009.47084647

Pinks, D. H. (2009). *Drive: The surprising truth about what motivates us*. New York, NY: Riverhead Books.

Puccio, G. J., Mance, M., & Murdock, M. C. (2011). *Creative leadership: Skills that drive change*. Thousand Oaks, CA: Sage.

Ravid, R. (2011). *Practical statistics for educators* (4th ed.). Lanham, MD: Rowman & Littlefield.

Richard, A. (2003). *Making our own road: The emergence of school-based staff developers in America's public school*s. New York, NY: The Edna McConnell Clark Foundation. Retrieved from http://www.emcf.org/programs/student/student_pub.htm#TMtag2

Rivera, N., Burley, K., & Sass, J. (2004). *Evaluation of school-based professional development* (Los Angeles Unified School District, Planning, Assessment and Research Division Pub. No 187). Retrieved from http://notebook.lausd.net/pls/ptl/docs/PAGE/CA_LAUSD/FLDR_ORGANIZATIONS/FLDR_PLCY_RES_DEV/PAR_DIVISION_MAIN/RESEARCH_UNIT/PUBLICATIONS/REPORTS/SBPD%20EVAL%20Y3.PDF

Sanders, W., & Rivers, J. (1996). *Cumulative and residual effects of teachers on future student academic achievement*. Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.

Scharmer, C. (2009). *Theory U: Leading from the future as it emerges: The social technology of presencing.* San Francisco, CA: Berrett-Koehler.

Senge, P. (2008). *The necessary revolution: How individuals and organizations are working together to create a sustainable world.* New York, NY: Doubleday.

Shanklin, N. (2006, September). What are the characteristics of effective literacy coaching? *Literacy Coaching Clearinghouse*. Retrieved from http://www.literacycoachingonline.org

Shanklin, N. (2007). How can you gain the most from working with a literacy coach? *Voices From the Middle*, *14*(4), 44–47.

Showers, B., & Joyce, B. (1996). The evolution of peer coaching. *Educational Leadership*, *53*(6), 12–16.

Stephens, D., Morgan, D. N., DeFord, D. E., Donnelly, A., Hamel, E., Keith, K. J., & . . . Leigh, S. (2011). The impact of literacy coaches on teachers' beliefs and practices. *Journal of Literacy Research*, *43*(3), 215–249. doi:10.1177/1086296X11413716

Strahan, D., Geitner, M., & Lodico, M. (2010). Collaborative professional development toward literacy learning in a high school through Connected Coaching. *Teacher Development*, *14*(4), 519–532. doi:10.1080/13664530.2010.533493

Sumner, K. (2011). *An explanatory mixed-methods study of instructional coaching practices and their relationship to student achievement* (Doctoral dissertation). Western Carolina University, Cullowhee, NC. Retrieved from http://libres.uncg.edu/ir/wcu/f/Sumner2011.pdf

Swafford, J. (1998). Teachers supporting teachers through peer coaching. *Support for Learning*, *13*, 54–58.

Symonds, K. (2003). *Literacy coaching: How school districts can support a long-term strategy in a short-term world*. San Francisco, CA: The Bay Area School Reform Collaborative. Retrieved from ERIC database. (ED477297)

Taylor, E. (2007). An update of transformative learning theory: A critical review of the empirical research (1999–2005). *International Journal of Lifelong Education*, *26*(2), 173–191.

Taylor, J. (2008). Instructional coaching: The state of the art. In M. Mangin & S. Stoelinga (Eds.), *Effective teacher leadership: Using research to inform and reform*. Danvers, MA: Teachers College Press.

Teemant, A., Leland, C., & Berghoff, B. (2014). Development and validation of a measure of critical stance for instructional coaching. *Teaching & Teacher Education*, *39,* 136–147. doi:10.1016/j.tate.2013.11.008

Teemant, A., Wink, J., & Tyra, S. (2011). Effects of coaching on teacher use of sociocultural instructional practices. *Teaching & Teacher Education*, *27*(4), 683–693. doi:10.1016/j.tate.2010.11.006

Vanderburg, M., & Stephens, D. (2010). The impact of literacy coaches: What teachers value and how teachers change. *The Elementary School Journal*, *111*(1), 142–163. doi: 0013-5984/2010/11101-0007

Walpole, S., & McKenna, M. C. (2004), *The literacy coaches handbook:* A guide to *research-based practice*. New York, NY: Guilford.

Walpole, S., & McKenna, M. C. (2007). *Differentiated reading instruction: Strategies for the primary grades.* New York, NY: Guilford.

Walpole, S., McKenna, M., Uribe-Zarain, X., & Lamitina, D. (2010). The relationship between coaching and instruction in the primary grades: Evidence from high poverty schools. *The Elementary School Journal*, *111*(1), 115–140. doi: 0013-5984/2010/11101-0006

Wertsch, J. (1985). *Culture, communication, and cognition: Vygotskian perspectives*. Cambridge, MA: Cambridge University Press.

Yopp, D., Burroughs, E., & Sutton, J. (2010). *Teacher reflection and impact survey*. Bozeman, MT: Montana State University and RMC Research Corporation.

Zmeyov, S. (1998). Andragogy. origins, developments, and trends. *International Review of Education, 44*(1), 105.

APPENDIX A: TEACHER REFLECTION AND IMPACT SURVEY

Teacher Reflection and Impact Survey

The following survey will ask you to reflect on the coaching you've received from your instructional mathematics coach. If you're unsure about an answer, simply give us your best recollection.

Enter your name or ID code:

[ ]

1. **Please record (as a numeral, 0 or greater) the number of times you received coaching from your coach this school year to date in the following contexts:**

   a. How many times were you coached in mathematics? [ ]

   b. How many of the sessions included in answer (a) included a pre-observation conference, a lesson observation or model, AND a post-observation conference? [ ]

   c. How many of the sessions included in answer (b) involved lessons in number sense and operations? [ ]

   d. How many times, if any, were you coached by your coach in a subject outside of mathematics? [ ]

2. **How often did your coaching sessions include a pre-lesson conference?**

   ○ Never
   ○ Less than half the time, but sometimes
   ○ Half the time
   ○ More than half the time, but not always
   ○ Always

3. **How often did your coaching sessions include a lesson observation?**

   ○ Never
   ○ Less than half the time, but sometimes
   ○ Half the time
   ○ More than half the time, but not always
   ○ Always

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4. How often did your coaching sessions include a post-lesson conference?

- ○ Never
- ○ Less than half the time, but sometimes
- ○ Half the time
- ○ More than half the time, but not always
- ○ Always

5. During this school year, how often has your mathematics coach modeled a lesson for you?

- ○ Never
- ○ Once
- ○ Twice
- ○ Three times
- ○ More than three times

6. Please rate each of the following statements on a scale from 1 to 5, with 1 meaning *not at all* and 5 meaning *to a great extent*. These ratings should be your *overall assessment* of the coaching. You are not averaging individual coaching sessions, but rather encapsulating your view of the quality of your coaching relationship over the academic year.

	Not at All				To a Great Extent
	1	2	3	4	5
a. I felt comfortable communicating with my coach.	○	○	○	○	○
b. I felt my coach respects my opinions and understands my situation and the challenges I face.	○	○	○	○	○
c. I felt comfortable with my coach's reflecting on my teaching practices.	○	○	○	○	○
d. I valued my coach's input.	○	○	○	○	○

Continued on next page

Topics Discussed

7. Please rate each of the following statements on a scale from 1 to 5, with 1 meaning *not at all* and 5 meaning *to a great extent*. These ratings should be your *overall assessment* of what occurred during the coaching sessions. These are not value judgments — just a measure of what topics were discussed. You are not averaging individual coaching sessions, but rather encapsulating your view of what was discussed during coaching sessions over the academic year.

A low rating on an item means that you didn't focus on that particular topic, which is fine. You may not have focused on that topic for good reasons. We are simply keeping track of what you *did* discuss, not whether or not it needed to be discussed.

Mathematics Content	Not at All				To a Great Extent
	1	2	3	4	5
a. My coach and I discussed significant and worthwhile mathematical content.	○	○	○	○	○
b. My coach and I discussed mathematical content that I teach.	○	○	○	○	○
c. My coach and I discussed ways to increase the level of cognitive demand of the mathematical content I teach.	○	○	○	○	○
d. My coach and I discussed mathematical content beyond the grade(s) I teach.	○	○	○	○	○

Mathematical Concept and Inquiry	Not at All				To a Great Extent
	1	2	3	4	5
e. My coach and I discussed ways of incorporating investigative, inquiry-based or discovery-based mathematics learning into my lessons.	○	○	○	○	○
f. My coach and I discussed ways to infuse more mathematical concept development into my lessons.	○	○	○	○	○
g. My coach and I discussed ways to infuse more mathematical problem-solving into my lessons.	○	○	○	○	○
h. My coach and I discussed ways to engage students in thought-provoking activities centered on important mathematical ideas.	○	○	○	○	○
i. My coach and I discussed ways to emphasize elements of mathematical abstraction or sense-making into my lessons.	○	○	○	○	○

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Classroom Environment/Culture	Not at All 1	2	3	4	To a Great Extent 5
j. My coach and I discussed ways to encourage students to pursue intellectual rigor, constructive criticism and/or challenging of ideas.	○	○	○	○	○
k. My coach and I discussed ways to increase student participation in mathematics lessons.	○	○	○	○	○
l. My coach and I discussed ways to create an environment where students listen to one another's mathematical ideas.	○	○	○	○	○
m. My coach and I discussed ways to "read" or detect students' levels of understanding of the mathematics being taught.	○	○	○	○	○
n. My coach and I discussed ways to improve the use of questioning strategies in the context of mathematics instruction (such as, but not limited to, higher-order questions, open questions or wait time).	○	○	○	○	○

Reflection and Planning	Not at All 1	2	3	4	To a Great Extent 5
o. My coach and I set goals and objectives aimed at implementing ideas and addressing issues we discussed.	○	○	○	○	○
p. My coach and I were reflective about my students' learning.	○	○	○	○	○
q. My coach and I were reflective about my teaching practices.	○	○	○	○	○

Likely Impact on Your Instruction

8. Please rate each of the following items on a scale from 0 to 5, with 0 meaning the topic wasn't discussed or was not a point of emphasis, 1 meaning *no impact* and 5 meaning *very large impact*. These ratings should be your *overall assessment* of the coaching sessions' impact on your instruction. These are not value judgments — just a measure of whether or not your instruction changed because of the coaching sessions. You are not averaging individual coaching sessions, but rather encapsulating your view of the sessions' impact on your teacher practices over the academic year.

Please rate the LEVEL OF IMPACT ON YOUR INSTRUCTION for each of the following:

Continued on next page

	Didn't Discuss or not a Topic of Emphasis	Discussed, but no Impact		Moderate Impact		Very Large Impact
	0	1	2	3	4	5
a. The mathematical content my coach and I discussed.	○	○	○	○	○	○
b. Discussions with my coach about ways of incorporating investigative, inquiry-based or discovery-based mathematics learning into my lessons.	○	○	○	○	○	○
c. Discussions with my coach about ways to infuse more conceptual understanding into my lessons.	○	○	○	○	○	○
d. Discussions with my coach about ways to infuse more problem-solving into my lessons.	○	○	○	○	○	○
e. Discussions with my coach about ways to "read" or detect students' levels of understanding.	○	○	○	○	○	○
f. Discussions with my coach about ways to improve the use of questioning strategies in the context of mathematics instruction (such as, but not limited to, higher-order questions, open questions or wait time).	○	○	○	○	○	○
g. Discussions with my coach about ways to engage students in thought-provoking activities centered on important mathematical ideas.	○	○	○	○	○	○
h. Discussions with my coach about ways to emphasize elements of mathematical abstraction or sense-making in lessons.	○	○	○	○	○	○
i. Discussions with my coach about ways to encourage student participation.	○	○	○	○	○	○
j. Discussions with my coach about ways to encourage students to pursue intellectual rigor, constructive criticism and/or challenging of ideas.	○	○	○	○	○	○
k. The goals and objectives my coach and I set aimed at implementing ideas and addressing issues we discussed.	○	○	○	○	○	○
l. Discussions with my coach about my students' learning.	○	○	○	○	○	○
m. Discussions with my coach about my teaching practices.	○	○	○	○	○	○

You have reached the end of the Teacher Reflection and Impact Survey. If you are finished, please submit your responses according to your instructions.

Yopp, D., Burroughs, E., & Sutton, J. (2010). Teacher Reflection and Impact Survey. Bozeman, MT, and Denver, CO: Examining Mathematics Coaching (Montana State University and RMC Research Corporation). Supported by NSF Discovery Research K-12 Program, Award No. 0918326.

APPENDIX B: ADAPTED TRIS

Please note the Adapted TRIS document format (below) was changed once the questions were uploaded into SurveyMonkey.

Please select **one** departmental category that best represents your teaching assignment:

____Humanities (English and Social Studies)

____Math and Science (Math and Science)

____Elective (Art, Business, Career and Technical Education, Drama, Health, Music, Physical Education, World Language,

The following survey will ask you to reflect on the coaching you have received from your instructional coach. If you are unsure of an answer, simply give your best recollection.

Please rate each of the following statements on a scale from 1 to 5, with 1 meaning *not at all* and 5 meaning to a *great extent.* These ratings should be your *overall assessment* of coaching. You are not averaging individual coaching sessions, but rather encapsulating your view of the quality of your coaching relationship.

1. I felt comfortable communicating with my coach
2. I felt my coach respects my opinions, understands my situation, and the challenges I face
3. I felt comfortable with my coach's reflecting on my teaching practice
4. I valued my coach's input

Please rate each of the following statements on a scale from 1 to 5, with 1 meaning *not at all* and 5 meaning to a *great extent.* These ratings should be your *overall assessment* of what occurred during the coaching sessions. These are not value judgments—just a measure of what topics were discussed. You are not averaging individual coaching sessions, but rather encapsulating your view of the quality of your coaching relationship.

A low rating on an item means that you didn't focus on that particular topic, which is fine. You may not have focused on that topic for good reason.

1. My coach and I discussed significant and worthwhile content
2. My coach and I discussed the content that I teach
3. My coach and I discussed ways to increase academic rigor
4. My coach and I discussed content beyond the grade level I teach
5. My coach and I discussed ways to incorporate literacy-based learning into my lessons

6. My coach and I discussed ways to increase more concept development into my lessons
7. My coach and I discussed ways to increase more problem solving into my lesson
8. My coach and I discussed ways to increase student participation in lessons
9. My coach and I discussed ways to make meaning
10. My coach and I discussed ways to encourage students to pursue intellectual rigor and/or challenging of ideas
11. My coach and I discussed ways to create an environment where students collaborate and listen to one another's ideas
12. My coach and I discussed formative assessments
13. My coach and I discussed ways to improve the use of questioning strategies (such as, but not limited to, higher order questions, open ended questions, or wait time)
14. My coach and I set goals and objectives aimed at implementing ideas and addressing issues we discussed
15. My coach and I were reflective about my students' learning
16. My coach and I were reflective about my teaching practices

Please rate each of the following items on a scale from 0–5, with 0 meaning the topic wasn't discussed or was not a point of emphasis. 1 meaning no impact and 5 meaning very large impact. These ratings should be your overall assessment of the coaching sessions' impact on your instruction. These are not value judgments-just a measure of whether or not your instruction changed because of the coaching sessions. You are not averaging coaching sessions, but rather encapsulating your view of the sessions' impact on your teacher practices.

Please rate LEVEL OF IMPACT ON YOUR INSTRUCTION for each of the following:

1. The content I teach
2. Discussions with my coach about inquiry or discovery based learning
3. Discussions with my coach about ways to infuse more conceptual understanding into my lessons
4. Discussions with my coach about ways to infuse more problem-solving into my lessons
5. Discussions with my coach about formative assessments
6. Discussions with my coach about ways to improve questioning strategies
7. Discussions with my coach about how to increase engagement in thought provoking activities
8. Discussions with my coach about how to increase student participation
9. Discussions with my coach about ways to encourage students to pursue intellectual rigor and/or challenging ideas
10. The goals and objectives my coach and I set aimed at implementing ideas and addressing issues we discussed
11. Discussions with my coach about student learning
12. Discussions with my coach about my teaching practices

APPENDIX C: CONSTRUCT RELIABILITY AND VALIDITY REPORT

EXAMINING MATHEMATICS COACHING

Construct Reliability and Validity of Selected EMC Instrumentation

December 13, 2010

Funding By The National Science Foundation
Discovery Research K-12 Program (DR K-12),
Award No. 0918326

Contents

Construct Validity and Reliability of the EMC Teacher Reflection and Impact Survey

The Instrument

The EMC Teacher Reflection and Impact Survey (TRIS) is the teacher version of the CRIS and provides a format for participating teachers to reflect upon the mathematics coaching they have received and then assess the perceived impact of that coaching. In June of 2010, all participating EMC teachers ($N = 173$) were asked to complete the survey.

Factor Analysis

To assess the construct validity of the 17 coaching topic reflection items and the 13 coaching impact items, maximum likelihood extractions with varimax rotations were computed on the data for each set of items. Exhibit 19 displays the factor loadings for the coaching reflection items and Exhibits 20 and 21 display the item descriptions.

Teacher Topic Reflection Scale

Exhibit 19. Teacher Topic Reflection Factor Structure

	Factor	
Item #	1 Topics Discussed	2 Coaching Relationship
7c	.858	
7e	.849	
7f	.839	
7g	.837	
7h	.807	
7i	.807	
7n	.798	
7l	.785	
7k	.784	
7a	.780	.405
7m	.765	
7p	.759	.408
7b	.757	
7o	.739	
7j	.735	
~~7q~~	~~.715~~	~~.450~~
7d	.674	
6a		.953
6b		.946
6c		.807
6d		.779

Note: Factor 1 = 51.39%, Factor 2= 21.94%. Total variance explained = 73.33%.

Exhibit 20. Factor 1: Topics Discussed

Item #	Item Description
7a	My coach and I discussed significant and worthwhile mathematical content.
7b	My coach and I discussed mathematical content that I teach.
7c	My coach and I discussed ways to increase the level of cognitive demand of the mathematical content I teach.
7d	My coach and I discussed mathematical content beyond the grade(s) I teach.
7e	My coach and I discussed ways of incorporating investigative, inquiry-based or discovery-based mathematics learning into my lessons.
7f	My coach and I discussed ways to infuse more mathematical concept development into my lessons.
7g	My coach and I discussed ways to infuse more mathematical problem-solving into my lessons.
7h	My coach and I discussed ways to engage students in thought-provoking activities centered on important mathematical ideas.
7i	My coach and I discussed ways to emphasize elements of mathematical abstraction or sense-making into my lessons.
7j	My coach and I discussed ways to encourage students to pursue intellectual rigor, constructive criticism and/or challenging of ideas.
7k	My coach and I discussed ways to increase student participation in mathematics lessons.
7l	My coach and I discussed ways to create an environment where students listen to one another's mathematical ideas.
7m	My coach and I discussed ways to "read" or detect students' levels of understanding of the mathematics being taught.
7n	My coach and I discussed ways to improve the use of questioning strategies in the context of mathematics instruction (such as, but not limited to, higher-order questions, open questions or wait time).
7o	My coach and I set goals and objectives aimed at implementing ideas and addressing issues we discussed.
7p	My coach and I were reflective about my students' learning.

Exhibit 21. Factor 2: Coaching Relationship

Item #	Item Description
6a	I felt comfortable communicating with my coach.
6b	I felt my coach respects my opinions and understands my situation and the challenges I face.
6c	I felt comfortable with my coach's reflecting on my teaching practices.
6d	I valued my coach's input.

Coaching Impact Scale

The Coaching Impact scale consists of 13 items and is measured on a 6 point Likert scale with anchors at 0 = Didn't discuss, or not a topic of emphasis, 1 = Discussed, but no impact, 3 = Moderate impact, and 5 = Very large impact. As shown in Exhibit 22, the 13 items in the coaching impact scale worked together to form one scale.

Exhibit 22. Teacher Impact Factor Structure and Item Descriptions

Item	Description	Factor 1 Impact
8g	Discussions with my coach about ways to engage students in thought-provoking activities centered on important mathematical ideas.	.876
8l	Discussions with my coach about my students' learning.	.858
8b	Discussions with my coach about ways of incorporating investigative, inquiry-based or discovery-based mathematics learning into my lessons.	.857
8h	Discussions with my coach about ways to emphasize elements of mathematical abstraction or sense-making in lessons.	.842
8m	Discussions with my coach about my teaching practice.	.840
8i	Discussions with my coach about ways to encourage student participation.	.839
8c	Discussions with my coach about ways to infuse more conceptual understanding into my lessons.	.837
8f	Discussions with my coach about ways to improve the use of questioning strategies in the context of mathematics instruction (such as, but not limited to, higher-order questions, open questions or wait time).	.823
8a	The mathematical content my coach and I discussed.	.816
8k	The goals and objectives my coach and I set aimed at implementing ideas and addressing issues we discussed.	.815
8d	Discussions with my coach about ways to infuse more problem-solving into my lessons.	.813
8j	Discussions with my coach about ways to encourage students to pursue intellectual rigor, constructive criticism and/or challenging of ideas.	.811
8e	Discussions with my coach about ways to infuse more problem-solving into my lessons.	.800

Note: Factor 1 = 69.42% of the variance.

Internal Reliability

Internal reliability of the scales on the TRIS, as presented in Exhibit 23, reveals a high level of reliability for each of the three scales.

Exhibit 23. Reliability Analysis for the TRIS

Scale	Cronbach's Alpha
Topics Discussed	.973
Coaching Relationships	.953
Impact of Coaching	.967

Recommendations

The reliability and validity of the data produced from this instrument was very good after the removal of one item. The recommendation is to remove the one item from further analysis.

Descriptive Statistics from the EMC TRIS Data Set

Means and standard deviations for the six scales derived from the TRIS are presented in Exhibit 24. The highest mean score appears for Coaching Relationships.

Exhibit 24. Means and Standard Deviations for Scale Items on the TRIS (*N* = 174)

Scale	*Mean*	*SD*
Topics Discussed	3.51	1.08
Coaching Relationships	4.60	0.77
Impact of Coaching	2.84	1.37

APPENDIX D: INTERVIEW QUESTIONS

1. Please tell me about your professional assignment and how long you have been teaching at the high school.
2. Could you describe what interactions you have had with an instructional coach?
3. What do you believe to be the purpose of instructional coaching?
4. What skill sets do you believe are the most important for an instructional coach?
5. How do you think your colleagues feel about instructional coaching?
6. Do you think a teacher's content assignment affects how he or she feels about instructional coaching? Why or why not?
7. Do you think a teacher's number of years of experience affects how he or she feels about instructional coaching? Why or why not?
8. Based on your experiences as a high school classroom teacher, could you please describe what you believe are the greatest challenges with implementing instructional coaching at the high school level?
9. Do you believe instructional coaching has affected teacher practice at your high school? Please explain why or why not.
10. Do you believe instructional coaching has affected your skill level? Why or why not?
11. Interpretation of data (to be determined based on the TRIS results).

APPENDIX E: CITI CERTIFICATION

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

SOCIAL, BEHAVIORAL AND EDUCATIONAL RESEARCH INVESTIGATORS CURRICULUM COMPLETION REPORT

Printed on 08/02/2014

LEARNER	Michael Reed (ID: 3750638)
DEPARTMENT	Education Leadership Ed D Program
EMAIL	mr865@drexel.edu
INSTITUTION	Drexel University
EXPIRATION DATE	09/14/2016

SOCIAL, BEHAVIORAL AND EDUCATIONAL RESEARCH INVESTIGATORS

COURSE/STAGE:	Basic Course/1
PASSED ON:	09/15/2013
REFERENCE ID:	11286191

REQUIRED MODULES	DATE COMPLETED	SCORE
Belmont Report and CITI Course Introduction	09/15/13	3/3 (100%)
Students in Research	09/15/13	10/10 (100%)
History and Ethical Principles - SBE	09/15/13	5/5 (100%)
Defining Research with Human Subjects - SBE	09/15/13	5/5 (100%)
The Regulations - SBE	09/15/13	5/5 (100%)
Assessing Risk - SBE	09/15/13	5/5 (100%)
Informed Consent - SBE	09/15/13	5/5 (100%)
Privacy and Confidentiality - SBE	09/15/13	5/5 (100%)
Research with Children - SBE	09/15/13	4/4 (100%)
Internet Research - SBE	09/15/13	5/5 (100%)
Research and HIPAA Privacy Protections	09/15/13	4/5 (80%)
Conflicts of Interest in Research Involving Human Subjects	09/15/13	5/5 (100%)
Drexel University College of Medicine Courses	09/15/13	No Quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Program course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Program Course Coordinator

APPENDIX F: TRIS CONSENT AND PERMISSION TO ADAPT SURVEY

Below is the correspondence giving permission to use and adapt the TRIS survey.

EMC Coaching Skills Inventory
EMC Coach Reflection and Impact Survey
EMC Teacher Needs Inventory
EMC Teacher Reflection and Impact Survey
EMC Teacher Survey

Terms of Use

When using our instruments or placing our items on a survey or other instrument, users agree to:

1. Include our copyright as it appears on each page of the instrument, and use the citation information that appears on the last page of the instrument when preparing any related papers, reports or presentations.

   As an example, for the Coaching Skills Inventory:

   Yopp, D., Burroughs, E., & Sutton, J. (2010). Coaching Skills Inventory. Bozeman, MT, and Denver, CO: Examining Mathematics Coaching (Montana State University and RMC Research Corporation). Supported by NSF Discovery Research K-12 Program, Award No. 0918326.

2. If requested, provide to EMC electronically (in a specified format) any data collected by the user's project through the use of EMC instruments.

3. Refrain from using these measures to publicly demonstrate coaches' or teachers' ability or lack of ability in mathematics coaching and/or mathematics. This helps secure coach and teacher participation in future studies. Specifically, this includes:

   - Not publicly discussing raw scores or frequencies from participants completing the instruments;
   - Not comparing the user's participants to EMC participants in any way that reveals raw scores or frequencies for either sample.

4. Refrain from using these items to evaluate individual coaches or teachers for tenure, pay, hiring or any other use with high-stakes consequence. These measures are not validated for these purposes.

5. Safeguard the privacy of participants in research as outlined by the host institution's Institutional Review Board procedures.

6. Refrain from using any non-released item in any presentation, paper, article or other public forum.

7. Refrain from making any changes to any item without EMC's prior permission.

8. Refrain from distributing copies of any non-released item to individuals other than participants in the user's research project.

9. Abide generally by the standards put forward in the *Standards for Educational and Psychological Testing* (AERA/APA 1999).

10. Request that K-8 mathematics coaches in the user's project or district participate in the EMC Coaching Knowledge Survey, an EMC instrument currently in the pilot phase. (EMC will provide a Web link to this 30-minute survey for distribution to the user's participants, and all who complete it will receive a $20 gift card.)

If you have any questions regarding these Terms of Use, please call Dr. John T. Sutton, EMC Co–Principal Investigator, at (800) 922-3636 or *sutton@rmcdenver.com*.

Agreed to this date: 11/18/13

Michael J. Rees — Michael J. Rees
Signature of Authorized Official — Printed Name

Doctoral Student
Title of Authorized Official

Institution Name: Drexel University

Address: 3141 Chestnut Street

City/State/Zip: Philadelphia, PA 19104

Phone: ~~570~~ 570-560-1888

E-mail: MREES@WASD.ORG / MR865@DREXEL.EDU

Instrument(s) requested:

___ EMC Coaching Skills Inventory
X EMC Coach Reflection and Impact Survey
X EMC Teacher Needs Inventory
X EMC Teacher Reflection and Impact Survey
X EMC Teacher Survey

Please submit your completed form to Dr. John T. Sutton.
E-mail: *sutton@rmcdenver.com*; Fax: (303) 825-1626

From: John Sutton
<Sutton@rmcres.com<mailto:Sutton@rmcres.com><mailto:Sutton@rmcres.com>>
Date: Monday, November 18, 2013 11:20 AM
To: WASD <mreed@wasd.org<mailto:mreed@wasd.org><mailto:mreed@wasd.org>>
Subject: RE: EMC Surveys

While there is nothing in the Terms of Use document to stipulate adapting the instrument to other purposes, standard practice would be to use the copyright in the revised instrument noting that items were adapted or modified from the original instrument. As an example, you may want to include on your instrument the following (or similar) language:

Items in this instrument were adapted from items originally contained in Yopp, D., Burroughs, E., & Sutton, J. (2010). Coaching Skills Inventory. Bozeman, MT, and Denver, CO: Examining Mathematics Coaching (Montana State University and RMC Research Corporation). Supported by NSF Discovery Research K-12 Program, Award No. 0918326 and are included here with permission.

APPENDIX G: AUTHORIZATION FROM RESEARCH SITE

Williamsport Area School District
2780 West Fourth Street Williamsport, PA 17701
(570) 327-5500 • www.wasd.org

August 25, 2014

Mr. Michael Reed
160 West Hills Drive
Williamsport, PA 17701

Dear Mr. Reed:

I hereby authorize you to conduct your Drexel University instructional coaching doctoral study at the Williamsport Area High School. I understand that teacher volunteers will complete an online survey intended to measure the characteristics, relationships, and effects of instructional coaching. I also understand that four teachers will be interviewed following the survey.

I have been assured that you will:

- Keep me informed of all work occurring within your study
- Follow all specifications of the IRB process
- Obtaining appropriate consent forms from participants
- Maintain confidentiality of all responses received through data collection and interviews

I look forward to receiving a copy of your finished study.

Sincerely,

Don Adams, Ph.D.
Superintendent

Developing responsible citizens through excellence in education.